



Summary Report for Group I Potential Release Locations, Environmental Baseline Survey

**FORMER MARINE CORPS AIR STATION
EL TORO, CALIFORNIA**

February 2005

**Base Realignment and Closure
Program Management Office West
1230 Columbia Street, Suite 1100
San Diego, CA 92101**

**Comprehensive Long-Term Environmental Action Navy
Contract Number N62742-94-D-0048, CTO 0104**



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EL TORO, CALIFORNIA**

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Prepared for:
**Base Realignment and Closure
Program Management Office West
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Prepared under:
**Comprehensive Long-Term Environmental Action Navy
Contract Number N62742-94-D-0048, CTO 0104**

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ACRONYMS AND ABBREVIATIONS

BCT	BRAC Cleanup Team
BRAC	Base Realignment and Closure
Cal-modified	California-modified
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-Term Environmental Action Navy
COPC	chemicals of potential concern
CTO	contract task order
EPA	Environmental Protection Agency
EPC	exposure point concentration
HI	hazard index
HQ	hazard quotient
MCAS	Marine Corps Air Station
NFECF PEARL	Naval Facilities Engineering Command, Pacific
NFECF SDIEGO	Naval Facilities Engineering Command, Southwest
PAH	polynuclear aromatic hydrocarbon
pH	negative logarithm of hydrogen ion concentration
PRG	preliminary remediation goals
PRL	potential release location
RIA	Runway Infield Area
SRU	silver recovery unit
SVOC	semi-volatile organic compound
THQ	target hazard quotient of 1
TPH	total petroleum hydrocarbon
TR	target incremental lifetime cancer risk of 10^{-6}
VOC	volatile organic compound
VSI	visual site inspection

1. INTRODUCTION

This summary report presents the results of environmental investigations conducted at 16 potential release locations (PRLs) at the former Marine Corps Air Station (MCAS) El Toro, California. The investigations included review of available records, visual site inspections (VSIs), and soil sampling. Based on the results of these investigations, this report provides an evaluation of environmental conditions and indicates whether significant releases of hazardous substances have occurred into the environment at these PRLs.

The environmental investigations of PRLs were initiated by the Southwest Division, Naval Facilities Engineering Command (NFECSW SDIEGO, formerly abbreviated as SWDIV) as authorized by the Base Realignment and Closure (BRAC) Cleanup Team (BCT) in a meeting held 29 September 2004 at Former MCAS El Toro. During this meeting, the BCT authorized NFECSW SDIEGO to prepare investigation plans and perform field investigations of the PRLs at the former MCAS El Toro without prior approval from the BCT. The main purpose of this was to expedite the assessment of the PRLs. NFECSW SDIEGO is responsible for evaluating each PRL, preparing the most appropriate sampling plan assess whether a release has occurred, conducting site investigations, and submitting final summary reports with conclusions and recommendations to the BCT.

The investigations reported in this document are substantially equivalent to the preliminary assessment pursuant to the National Oil and Hazardous Substances Contingency Plan (NCP) in Title 40 Code of Federal Regulations (CFR), Section (§) 300.410 (a) and (c), and 40 CFR § 300.420 (a) and (b). The investigations are also substantially equivalent to the investigations of real property pursuant to Community Environmental Response Facilitation Act (CERFA), Public Law 102-425, 19 October 1992, as it amends Section 120(h) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980.

This document was prepared for NFECSW SDIEGO, as authorized by the Pacific Division, Naval Facilities Engineering Command (NFECP PEARL, formerly abbreviated as PACNAVFAC-ENGCOM) under contract task order (CTO) no. 0104 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) II program, contract no. N62742-94-D-0048.

2. BACKGROUND

2.1 MCAS EL TORO BACKGROUND

Former MCAS El Toro is located in south-central Orange County, California, approximately 8 miles southeast of Santa Ana and 12 miles northeast of Laguna Beach (Figure 2-1). Former MCAS El Toro covers approximately 4,738 acres. Land use around former MCAS El Toro includes commercial, light industrial, agricultural, and residential. MCAS El Toro closed on 2 July 1999, as a part of the BRAC Act.

2.2 PRL INVESTIGATION BACKGROUND

During the 2003 environmental baseline survey (EBS), 76 facilities/features were identified at the former MCAS El Toro as being associated with a potential release of contaminants to the environment (Earth Tech 2003a). These facilities or features were assigned PRL designations because of one or more of the following factors:

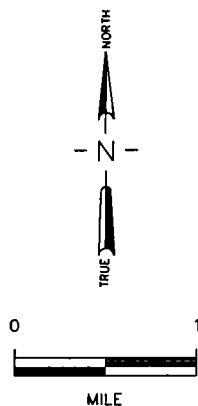
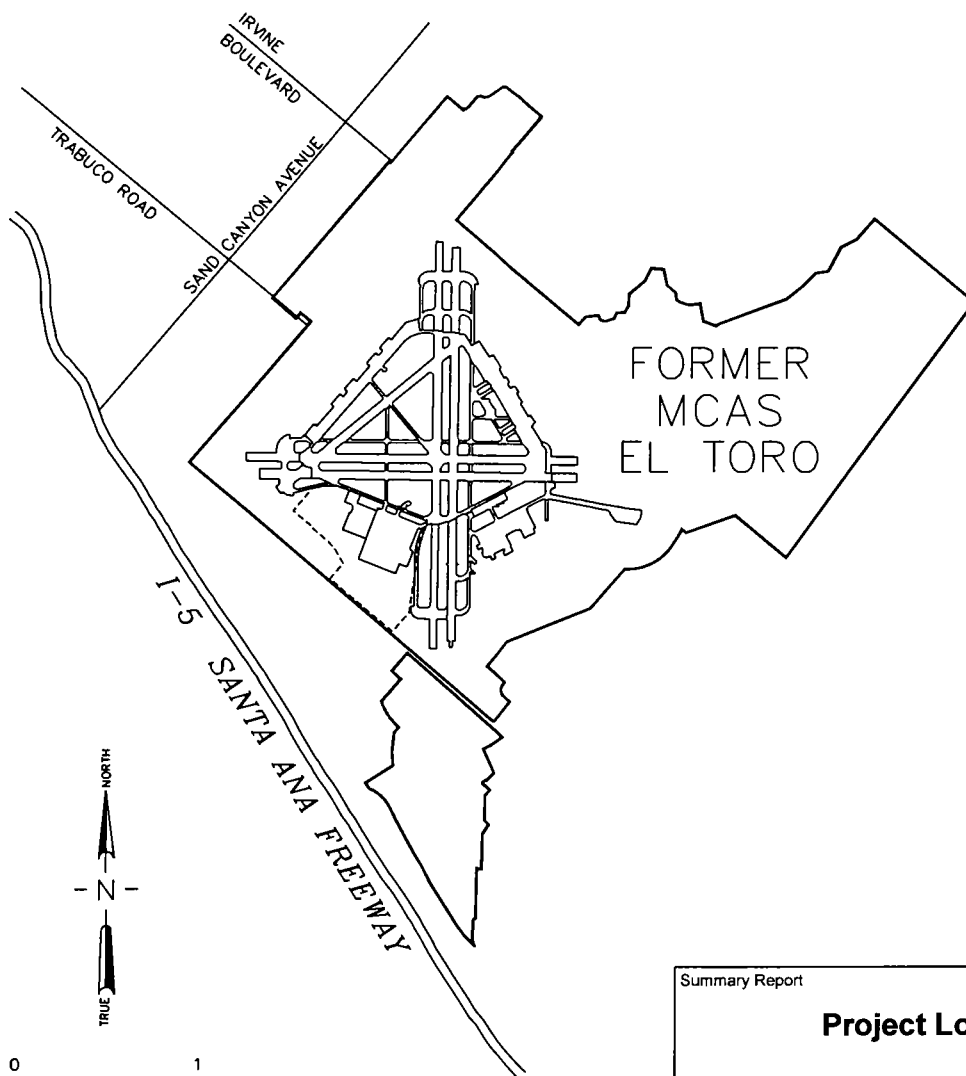
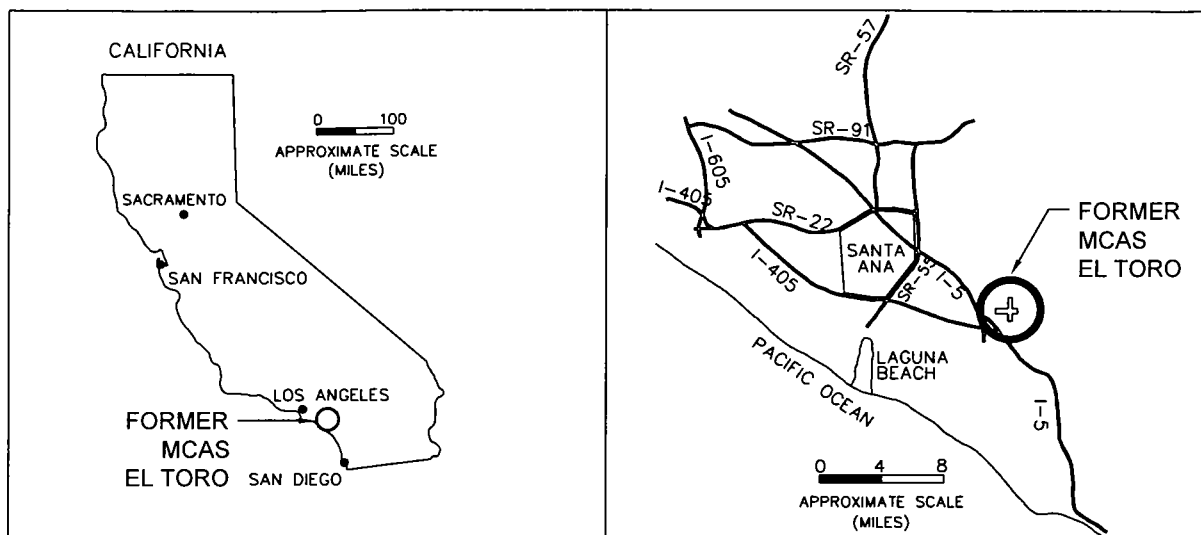
- Records reported a release of hazardous substances to the environment,

- Observations during the VSI conducted in 2002 indicated a potential release of hazardous substances to the environment, or
- Activities undertaken during operation of the station had a high probability of resulting in a release of hazardous substances to the environment.

The sites identified were designated as “PRL,” followed by the associated building number or feature (e.g., 296, Railroad, etc.). None of these PRLs were identified by previous investigations or surveys, with the exception of PRL 46 (Silver Recovery Unit [SRU] 03A), PRL 133 (SRU 03B), PRL 312 (SRU 03), and PRL 439 (SRU 010). These PRLs were previously identified as SRU locations of concern and were considered for further evaluation as PRLs to investigate the SRU and associated potential releases at these facilities.

Twenty-three (23) of the 76 PRLs were investigated in 2003, and one PRL (PRL 400) was investigated in February 2004. The results of the 2003 investigations are presented in the final report for the environmental baseline survey (Earth Tech 2003a) and the results for the 2004 investigation are presented in a draft technical memorandum (Earth Tech 2004a). Of those investigated, 17 PRLs were found to have no significant release and the regulatory agencies concurred that no further investigation was required.

For management purposes, the remaining 59 PRLs will be addressed in four groups. Group I was originally comprised of 11 PRLs: PRL 22, PRL 47, PRL 105, PRL 118, PRL 374, PRL 442, PRL 617/618, PRL 671/672, PRL 673, PRL 886/887, and PRL Runway Infield Area (RIA). The sampling for Group I of the PRLs was conducted in October 2004, and the results of the investigations are provided in this summary report. In addition, five PRLs from Group II (PRLs 114, 245/246, 658, 1585, and 1601), which did not require sampling because of past or ongoing investigations or closure of all issues and concerns, are also included in this report and considered part of Group I (for a total of 16 PRLs). The investigation results for the remaining three groups will be presented in subsequent summary reports.



Summary Report		
Project Location Map		
Environmental Baseline Survey		
Date 02-05	Former MCAS El Toro	Figure 2-1
Project No. 54506	EarthTech <small>A Tyco International Ltd. Company</small>	

3. INVESTIGATION METHODOLOGY

For each Group I PRL, records review, VSIs, and/or soil sampling were conducted to evaluate whether the release of hazardous substances or pollutants into the environment has occurred. The purpose of the records review and VSI was to identify environmentally significant issues. If any environmentally significant issue was identified, soil sampling for further assessment of the release was performed. If no environmentally significant issue was identified, no further investigation was recommended for the location.

3.1 SAMPLING METHODOLOGY

Once the environmentally significant issues were identified for each PRL, a sampling program was designed to assess whether a significant release of hazardous substances occurred. Sample locations were selected based on the following criteria:

- Where a report or visual evidence of a direct release of hazardous substance to the environment existed, such as stained soil or stressed vegetation, soil samples were collected at that location.
- Where a report or visual evidence of a release existed on concrete or pavement, such as significant staining, etching, or corrosion, soil samples were collected below the bottom of the floor slab or pavement.
- Where past operations involved the use of hazardous substances and the presence of features such as sumps, floor drains, storm drains, cracks, or pits may have resulted in the release of these substances to the environment, soil samples were collected in the vicinity of the features.
- Where evidence of direct releases of hazardous substances containing heavy metals to the sewer via drain pipes existed based on information on past activities or operations, samples of the drain pipe contents were collected and/or soil samples were collected beneath or adjacent to the drains. Drain samples were only analyzed for content of specific metals related to the substances used at the facility.

3.2 LABORATORY ANALYSIS AND QUALITY ASSURANCE

Laboratory analysis and data validation were performed in accordance with the specifications and requirements of the *Draft Work Plan* (Earth Tech 2002) and subsequent *Sampling and Analysis Plan Amendment No. 1* (Earth Tech 2004b). Laboratories solicited for this project successfully completed evaluation by the Naval Facilities Engineering Service Center. Further evaluation of laboratory performance was performed through data package reviews and oversight by the project chemist.

Data reported in the project report are flagged with the following appropriate qualifiers to indicate the usability:

- J estimated concentration
- N presumptive evidence of the identification of an analyte
- R rejected data (unusable)
- U not detected (e.g., not present because of blank contamination)

Combinations of qualifiers such as UJ and NJ are possible. Where the validation qualifiers affect the project decision recommendations, the individual PRL reports discuss the issues and the uncertainty or qualifications of the conclusions.

3.3 RISK SCREENING METHODOLOGY

Risk screening was performed for each Group I PRL to evaluate the risks associated with potential exposures to chemicals identified in the soil at each PRL. The results of this risk screening are presented in the summary reports for individual PRLs provided as attachments to this report.

The approach used for the risk screening consisted essentially of three elements: selection of chemicals of potential concern (COPCs), exposure point concentration (EPC) quantification, and risk quantification.

3.3.1 Selection of COPCs

For each PRL, COPCs were identified as the chemicals that were detected in at least one sample and have Environmental Protection Agency (EPA) Region 9 or California-modified (Cal-modified) cancer or noncancer preliminary remediation goals (PRGs) (EPA Region 9 2004).

3.3.2 EPC Quantification

The maximum detected concentrations of COPCs were used as EPCs (maximum EPCs) for risk screening.

3.3.3 Risk Quantification

For each PRL, maximum excess (incremental) cancer risk using maximum EPC and a respective carcinogenic PRG were estimated using the following formula:

$$\text{Excess Cancer Risk} = TR \times \frac{EPC_i}{PRG_i}$$

where:

TR = The target incremental lifetime cancer risk of 10^{-6}

EPC_i = Maximum EPC for $COPC_i$

PRG_i = EPA Region 9 or Cal-modified PRG for $COPC_i$ in soils based on carcinogenic effects

A Hazard Quotient (HQ), using EPC and noncarcinogenic PRG, was calculated using the following formula:

$$HQ = THQ \times \frac{EPC_i}{PRG_i}$$

where:

THQ = The target HQ of 1

PRG_i = EPA Region 9 or Cal-modified PRG for $COPC_i$ in soils based on noncarcinogenic effects

The cumulative residential excess cancer risk for exposure to multiple COPCs at a PRL was estimated using the following equation:

$$\text{Cumulative Excess Cancer Risk} = \sum \left[TR \times \frac{EPC_i}{PRG_i} \right]$$

The cumulative noncarcinogenic hazard index (HI) for exposure to multiple COPCs at a PRL was estimated as follows:

$$\text{Cumulative Noncarcinogenic HI} = \sum \left[THQ \times \frac{EPC_i}{PRG_i} \right]$$

4. INVESTIGATION RESULTS AND RECOMMENDATIONS

The investigation results, conclusions and recommendations for all Group I PRLs are presented in summary reports provided as attachments to this report. The attachments are organized as follows:

- Attachment 1: Summary Report – PRL 22
- Attachment 2: Summary Report – PRL 47
- Attachment 3: Summary Report – PRL 105
- Attachment 4: Summary Report – PRL 118
- Attachment 5: Summary Report – PRL 374
- Attachment 6: Summary Report – PRL 442
- Attachment 7: Summary Report – PRL 617/618
- Attachment 8: Summary Report – PRL 671/672
- Attachment 9: Summary Report – PRL 673
- Attachment 10: Summary Report – PRL 886/887
- Attachment 11: Summary Report – PRL RIA
- Attachment 12: Summary Report – PRL 114
- Attachment 13: Summary Report – PRL 245/246
- Attachment 14: Summary Report – PRL 658
- Attachment 15: Summary Report – PRL 1585
- Attachment 16: Summary Report – PRL 1601

Table 1 presents an assessment summary and final recommendations for the Group I PRLs.

Table 1: Summary of Assessments and Recommendations for Group I PRLs

PRL	Assessment Summary	Recommendation
22	Soil sample analyzed for pH, Lead, Cadmium, Nickel	No further investigation (NFI)
47	Soil samples analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH), Cadmium, Chromium, Cobalt, pH	NFI
105	Soil and drain samples analyzed for Copper, Mercury, Silver, Tin	NFI. Hazardous material identified in examination room sink drains. Loose material has been removed during sampling.
118	Soil samples analyzed for VOCs, TPH	NFI
374	Soil samples analyzed for TPH, Chromium	NFI
442	Soil samples analyzed for VOCs, TPH, Nitroaromatics and Nitroamines, Perchlorate	NFI
617/618	Soil samples analyzed for VOCs, TPH	NFI
671/672	Soil samples analyzed for VOCs, TPH	NFI
673	Soil sample analyzed for TPH, pH, Lead, Cadmium, Nickel	NFI
886/887	Previous investigations showed no evidence of contamination	NFI
RIA	Soil samples analyzed for TPH and polynuclear aromatic hydrocarbons (PAHs)	Soil PAH concentrations exceed residential preliminary remediation goals. Further investigation necessary to delineate the extent of contamination.
114	All issues and concerns addressed in previous investigations	NFI
245/246	All issues and concerns addressed in previous investigations	NFI
658	Site currently undergoing investigation	NFI
1585	All issues and concerns addressed in previous investigations	NFI
1601	Site currently undergoing investigation	NFI

5. REFERENCES

- Earth Tech, Inc (Earth Tech). 2002. *Draft Work Plan Preliminary Assessment of Locations of Concern, Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. Honolulu, HI: NFECSW SDIEGO. May.
- _____. 2003a. *Final Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. San Diego, CA: NFECSW SDIEGO. September.
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- _____. 2004a. *Draft Technical Memorandum, Phase II Investigation Sampling and Analysis Results/Risk Screening, Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. Honolulu, HI: NFECSW SDIEGO. April.

_____. 2004b. *Draft Sampling and Analysis Plan Amendment No. 1 Preliminary Assessment of Locations of Concern, Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. Honolulu, HI: NFECSW SDIEGO. March.

Environmental Protection Agency, United States, Region 9 (EPA Region 9). 2004. EPA Region 9 PRGs [Preliminary Remediation Goals] Tables. San Francisco, California. October.

Attachment 1
Summary Report
PRL 22



Summary Report for PRL 22, Environmental Baseline Survey

**Former Marine Corps Air Station,
El Toro, California**

February 2005

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A Sampling Design Specification Sheet – PRL 22	
B Validated Laboratory Analytical Data Reports	
C Land Surveying Data	

ACRONYMS AND ABBREVIATIONS

Bgs	below ground surface
BNI	Bechtel National Inc.
DON	Department of the Navy
EPA	Environmental Protection Agency
HI	hazard index
MCAS	Marine Corps Air Station
mg/kg	milligrams per kilogram
NFEC SW SDIEGO	Naval Facilities Engineering Command, Southwest
PH	negative logarithm of hydrogen ion concentration
PRG	preliminary remediation goal
PRL	potential release location
VSI	visual site inspection

1. BACKGROUND

Potential Release Location (PRL) 22 is associated with Building 22 and is located in the northwestern portion of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). Building 22 is listed as "Storehouse" in the 1948, 1949, 1950, 1954, and 1958 station lists. The building description changed to "Medical Storehouse" in 1973. In 1997, the building description changed to "Electronics/Communications Maintenance Shop," which is its last known description. Figure 2 shows the plan of Building 22 and the surrounding area.

Various investigations have been conducted at PRL 22 to evaluate whether the release of hazardous substances or pollutants has occurred in the area. These investigations include review of available records, a visual site inspection (VSI), and soil sampling.

There is one location of concern in the vicinity of this PRL. Temporary accumulation area (TAA) 22 (located east of Building 22, outside the area shown in Figure 2) was a short-term (i.e., less than 90 days) accumulation area for hazardous wastes. There has been no evidence of a release during numerous site visits by the Department of the Navy (DON) and its contractors. No further action has been recommended and regulatory agency concurrence is pending (Earth Tech 2003).

1.1 ISSUES AND CONCERNS

The following observations and conclusions were identified through the VSI and records review conducted in 2002 and 2004:

- Etched concrete was observed near the floor drain in the battery shop of Building 22. This indicated that a possible release to the soil of hazardous material, such as battery acid, might have occurred immediately below the etched concrete or via the floor drain. Further investigation of this issue was recommended.
- The yard at Building 22 was being used to store bins and vehicles of C&N Waste Services, Inc., at the time of the 2002 VSI. Other items observed at the site include tires, batteries, and an active, skid-mounted, 800-gallon, diesel fuel tank used by the lessee. During the subsequent visits to this PRL in 2004, the yard was found to be vacant and no stains or odors indicated a release at the site. Therefore, no further investigation was recommended for this issue.
- A crack in the floor of the building, which appeared to be structurally related, was observed during the 2002 VSI. There was no indication of industrial activity that would have resulted in releases to the environment through the damaged floor. No odors or stains indicated a release. Therefore, no further investigation was recommended for this issue.
- A pole-mounted transformer was identified during the VSI conducted in 2002 at the west end of the facility; however, no evidence of a release was identified. The records review confirmed that fluid in this transformer contains less than 50 parts per million (ppm) polychlorinated biphenyls (PCBs) (NFECSW SDIEGO, *Transformer Data Card*).

A sampling program was proposed to further investigate the issues identified and assess whether hazardous substances or pollutants have released to the environment. The chemicals of concern associated with the battery shop are acids and the heavy metals cadmium, lead, and nickel that make up components in batteries. A summary of soil sampling activities is presented in Section 2, and the results are presented in Section 3.

2. SAMPLING AND ANALYSIS SUMMARY

Sampling was conducted for evaluation of PRL 22 in October 2004. The sample locations are shown in Figure 2, and a summary of sampling and analyses is provided in Table 1. The specification sheet, which includes the rationale for the sampling design, is presented in Appendix A of this summary report.

Soil samples were collected at two locations, HA1 and HA2, at PRL 22. The sample at HA1 was collected adjacent to the floor drain in the battery shop. The sample at HA2 was collected near the sanitary sewer line outside the northern portion of Building 22. Both the samples were collected at 3 feet below ground surface (bgs) using a hand auger and were analyzed for pH, lead, cadmium, and nickel.

3. INVESTIGATION RESULTS

3.1 ANALYTICAL RESULTS AND QUALITY ASSURANCE

The analytical results for the samples collected at PRL 22, along with the United States Environmental Protection Agency (EPA) Region 9 or California-Modified residential preliminary remediation goals (PRGs), are presented in Table 2 (EPA Region 9 2004). Appendix B presents the validated laboratory analytical data and Appendix C presents the land surveying data.

3.2 RESULT EVALUATION AND RISK SCREENING

The pH values indicate that the soil is slightly basic and no release of acid has taken place in the vicinity of the sampling locations.

None of the metals exceeded their respective residential PRGs or MCAS El Toro background values (BNI 1996).

Risk screening was performed to evaluate risks associated with potential exposures to detected analytes in the soil at PRL 22. The methodology for risk screening is presented in Section 3.2 of the Summary Report, and results are presented in Table 3.

The cumulative maximum carcinogenic risk due to potential exposure to maximum detected concentrations of cadmium is $5.6\text{E-}10$, which is below the EPA point of departure risk level of $1.0\text{E-}06$. The cumulative maximum noncancer hazard associated with potential exposure to maximum detected concentrations of cadmium, nickel, and lead is expressed as a hazard index (HI) of 0.076, which is below the target HI of 1.

4. CONCLUSIONS AND RECOMMENDATIONS

The primary objective of investigations conducted at PRL 22 was to assess whether hazardous substances or pollutants were released to the environment. A review of available records, VSIs, and soil sampling indicate that no significant release of hazardous substances or pollutants has occurred at PRL 22. This conclusion is supported by the observation that detected concentrations of all chemicals were less than their respective residential PRGs and are not indicative of release. The cancer risk at PRL 22 is less than the EPA point of departure value of $1.0\text{E-}06$. Additionally, the noncancer risk at this PRL is less than the target HI of 1. Therefore, no further investigation is recommended for PRL 22.

5. REFERENCES

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Environmental Protection Agency, United States, Region 9 (EPA Region 9). 2004. *EPA Region 9 PRGs [Preliminary Remediation Goals] Tables*. San Francisco, California. October.

Tables

Table 1: Sampling and Analyses Summary – PRL 22

Sample Location	EPA ID	Sample Depth (bgs)	Sampling Technique	Analyte and Analytical Method ^a			
				PH 9045C	Lead 6010B	Cadmium 6010B	Nickel 6010B
HA1	LJ309	--	Hand Auger	X	X	X	X
HA2	LJ308	--	Hand Auger	X	X	X	X

Notes:

^a Analysis was in general accordance with the listed methods provided in EPA Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

X = analysis was performed for the specified analyte

Table 2. Analytical Results Summary - PRL 22

Analyte	Units	MCAS El Toro Background Concentrations (95th Quantile) ^a	Residential Soil PRG ^b	Sample Location	PRL 22- HA1	PRL 22-HA2
				Sample Depth	3 feet bgs ^c	3 feet bgs
				Sample Name	LJ309	LJ308
pH	—	—	—		8.34	7.72
Lead ^d	mg/kg ^e	15.1	1.5E+02		6	7.1
Cadmium	mg/kg	2.35	3.7E+01		0.63	0.79
Nickel	mg/kg	15.3	1.6E+03		11.4	12

Notes

— = Value does not exist

^a Source: BNI, 1996^b Analytical results were compared to EPA Region 9 PRGs (2004), with the exception of lead (see note b)^c bgs = below ground surface^d Analytical results for lead were compared to Cal-Modified PRG (2004) since it is significantly more protective than corresponding EPA Region 9 PRGs.^e mg/kg = milligram per kilogram

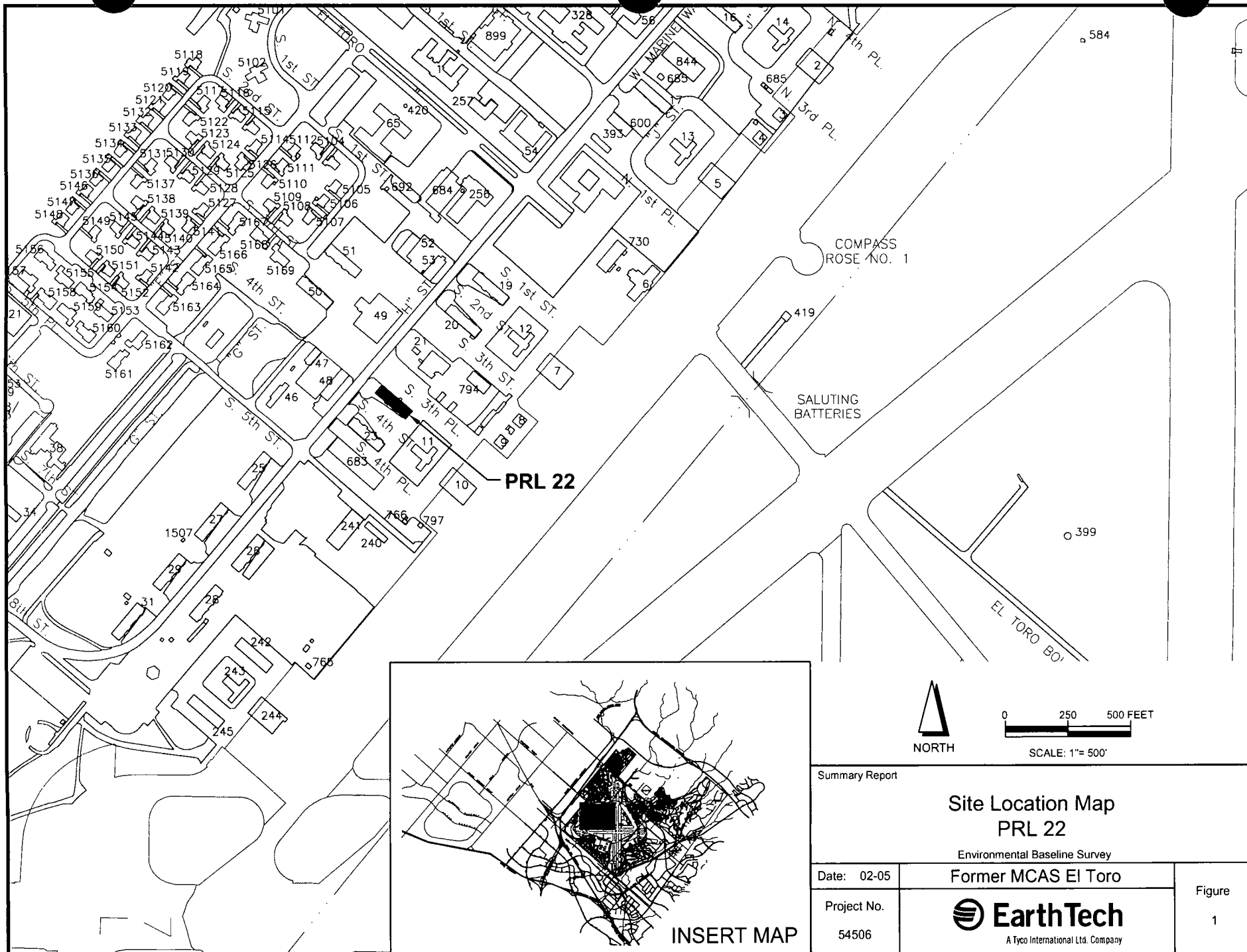
Table 3: Risk Screening Results - PRL 22

Chemical of Potential Concern	MCAS El Toro Background Concentrations (95th Quantile) ^a	Maximum EPC ^b (mg/kg) ^c	Carcinogenic PRG ^d (mg/kg)	Noncarcinogenic PRG ^d (mg/kg)	Risk Corresponding to Maximum EPC			
					Carcinogenic		Noncarcinogenic	
					Excess Cancer Risk ^e	Percent Contribution to Cancer Risk ^f	HI ^g	Percent Contribution to Noncancer Risk ^f
Lead ^f	15.1	7.1	--	1.5E+02	--	--	0.047	62%
Cadmium	2.35	0.79	1.4E+03	3.7E+01	5.6E-10	100%	0.021	28%
Nickel	15.3	12	--	1.6E+03	--	--	0.008	10%
Cumulative Maximum Risk					5.6E-10		0.076	

Notes:

^a Source: BNI, 1996^b EPC = exposure point concentration^c mg/kg =milligram per kilogram^d US EPA Region 9 PRGs (2004).^e Excess cancer risk = $1E-06 \times (\text{Maximum EPC}/\text{Carcinogenic PRG})$ ^f With respect to cumulative excess cancer risk or hazard index (including metals with background)^g HI = Maximum EPC / Noncarcinogenic PRG^h Cal-Modified Carcinogenic PRG (2004) was used for lead for excess cancer risk calculation since it is significantly more protective than corresponding EPA Region 9 PRG.

Figures



File: C:\Documents\Jeffrey.waagen\My Documents\cod_dwg\Working\Demis\Group 1 SR\SR_PRL 22.dwg Date: Feb 16, 2005 - 2:57pm



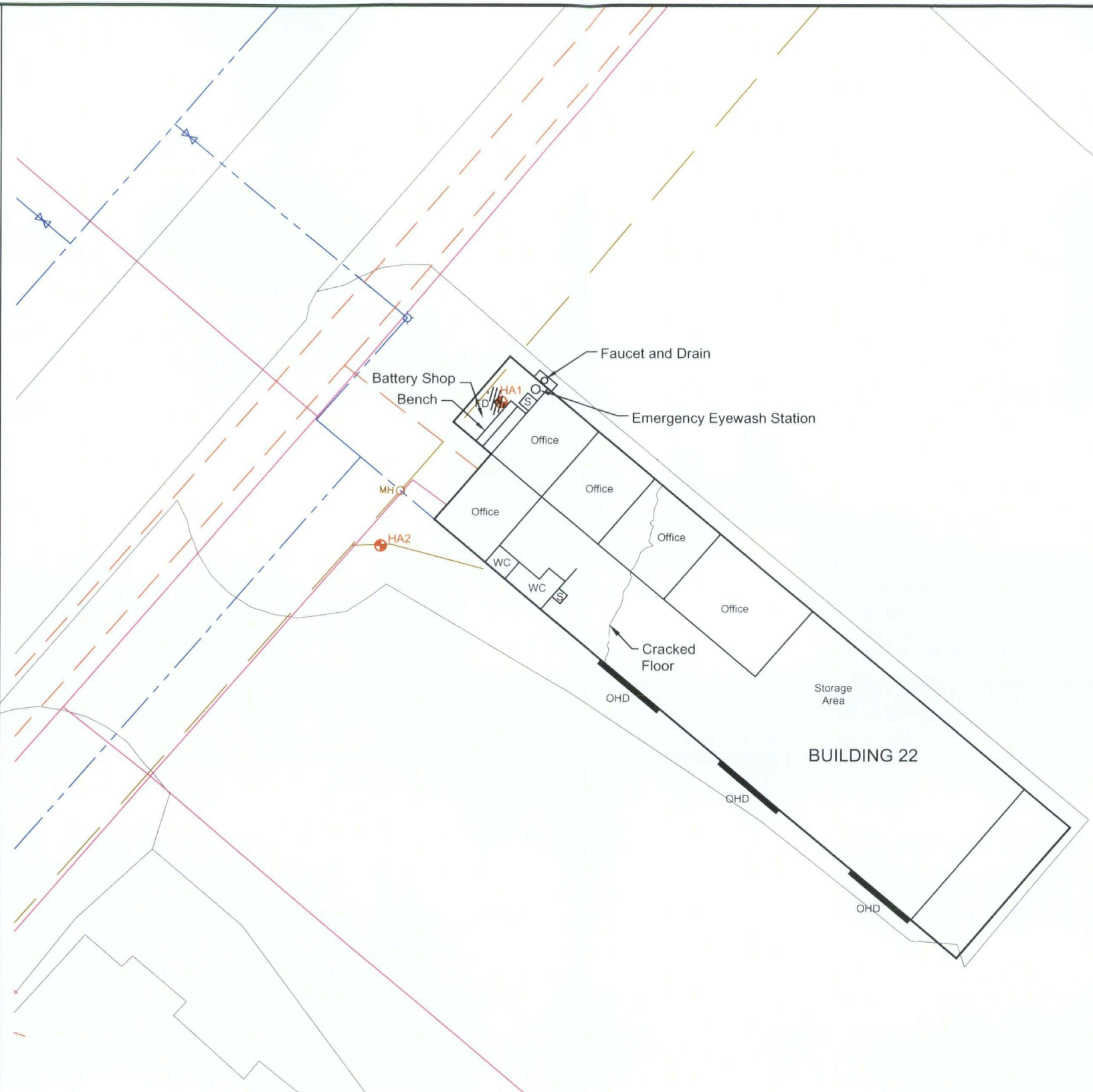
Northwest Corner of Building 22 with Battery Shop at Far Right (Facing West)



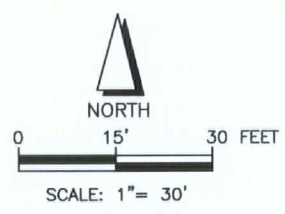
Etched Concrete Surrounding Floor Drain in Battery Shop



Yard on North Side of Building 22 Formerly Used to Store Disposal Bins and Trucks of C&N Waste Services Inc. and Various Items Including Used Tires and Batteries (Facing South)



- LEGEND:**
- Sanitary Sewer
 - Water Line
 - Natural Gas Line
 - Electrical Line
 - HA1 2004 Soil Sample Location
 - MH Manhole
 - Fire Hydrant
 - Water Valve
 - FD Floor Drain
 - WC Restroom
 - S Sink
 - OHD Overhead Door
 - Etched Concrete Surrounding Floor Drain



Note: Features and Interior Layout are Approximate and May Not be to Scale

Summary Report		
Site Plan PRL 22		
Environmental Baseline Survey		
Date: 02-05	Former MCAS El Toro	Figure 2
Project No. 54506	 A Tyco International Ltd. Company	

February 2005

Summary Report for PRL 22
Former MCAS El Toro

Appendix A
Sampling Design Specification Sheet – PRL 22



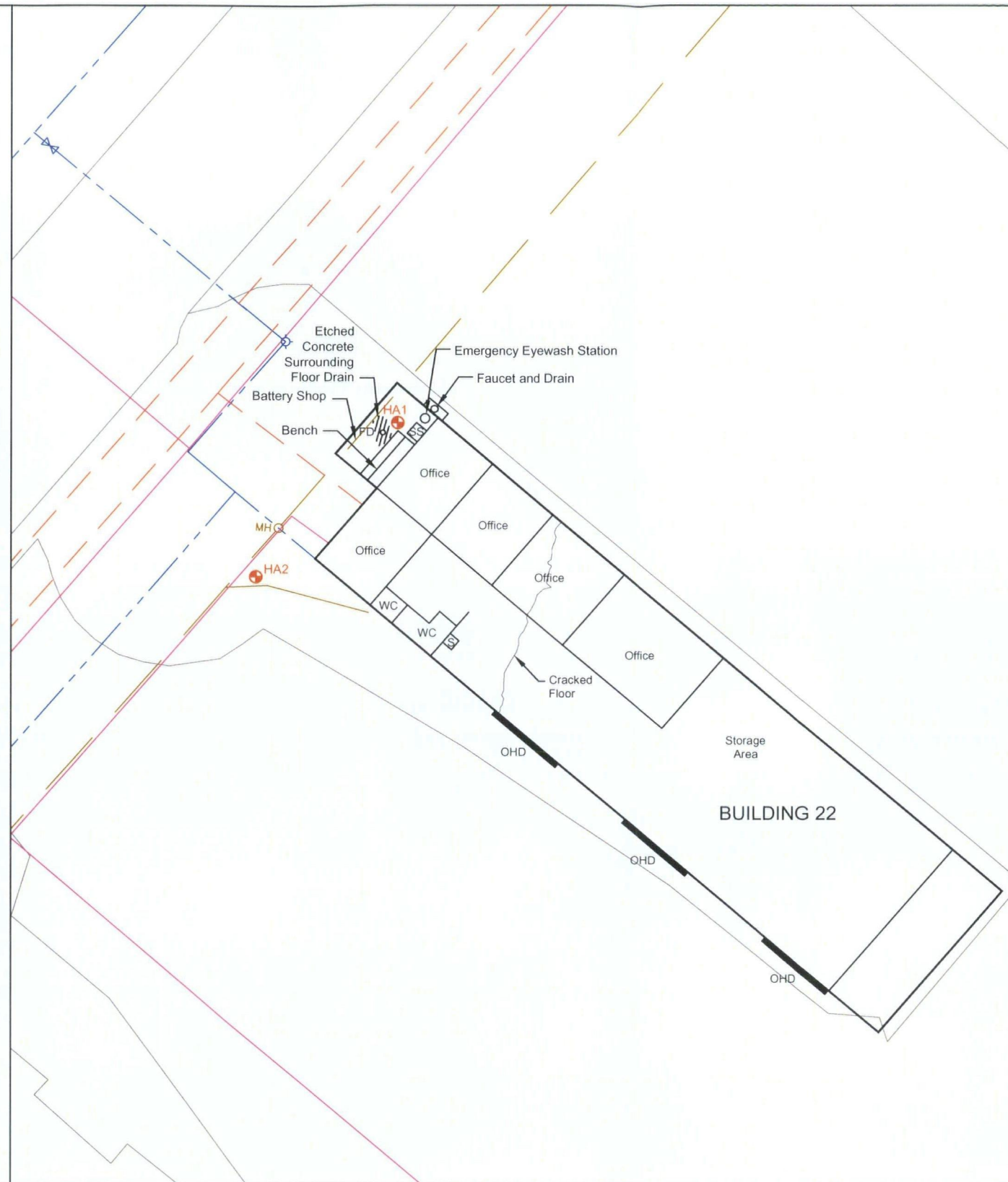
Northeast Corner of Building 22
(Facing West)



Etched Concrete Surrounding Floor Drain
in Battery Shop



Yard at Building 22 Used to Store Disposal Bins
and Trucks of C&N Waste Services Inc. and
Various Items Including Used Tires and Batteries
(Facing South)



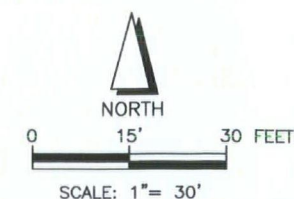
LEGEND:

— Sanitary Sewer
- - - Water Line
— Natural Gas Line
- - - Electrical Line
— Existing Infrastructure

HA1 Proposed Soil Sample Location
MH Manhole
Fire Hydrant
Water Valve

FD Floor Drain
WC Restroom
S Sink
SS Service Sink
OHD Overhead Door

Note: Locations of Features and Interior
Layout are Approximate



Background

The building is listed as Storehouse in the 1948, 1949, 1950, 1954, and 1958 station lists. The building description changed to Medical Storehouse in 1973. In 1997, the building description changed to Electronics/Communications Maintenance Shop and this was its last known description.

There is one location of concern (LOC) in the vicinity of this PRL. TAA 22 (located east of Building 22, outside the area shown in drawing) was a less than 90-day accumulation area for hazardous wastes. There has been no evidence of a release during numerous site visits by Navy and contract personnel. NFA has been recommended and regulatory agency concurrence is pending.

A pole-mounted transformer was identified during the 2002 VSI at the west end of the facility; however no evidence of a release was identified. The records review confirmed that fluid in this transformer contains less than 50 ppm PCBs.

Issues/Concerns

1. Etched concrete was observed near the floor drain in the battery shop during the 2002 VSI conducted in support of the EBS. This indicates that a possible release may have occurred into the soil immediately below the etched concrete or via the floor drain. Further investigation is recommended.
2. At the time of the 2002 VSI, the yard at Building 22 was being used to store bins and vehicles of C&N Waste Services, Inc. Other items observed at the site include tires, batteries and an active, skid-mounted, 800-gallon, diesel fuel tank used by the lessee. The yard is currently vacant and no stains or odors indicative of a release were observed at the site during subsequent visits in 2004. No further action is recommended for this issue.
3. A crack in the floor of the building, which appeared to be structurally related, was observed during the 2002 VSI. There was no indication of industrial activity, which would have resulted in releases to the environment through the damaged floor. No odors or stains indicative of a release were observed. No further action is recommended for this issue.

Investigation Design

1. Collection of one soil sample is proposed at location HA1, adjacent to the floor drain in the battery shop. The sample will be collected 1 foot below the sewer invert next to the by hand auger and analyzed for pH and lead, cadmium, nickel.
2. Collection of one soil sample is proposed at location HA2, near the sanitary sewer line outside the northern portion of Building 22. The sample will be collected 1 foot below the sanitary sewer line by hand auger, and analyzed for pH, lead, cadmium, and nickel. This sample will be used to assess if any releases to the environment occurred due to cracks in the sanitary sewer in the vicinity of the building.

References

1. Transformer Data Card, Former MCAS El Toro Caretaker Office.

Preliminary Assessment

Final

**Proposed Sampling Locations
PRL 22**

Environmental Baseline Survey

Date: 01-05	Former MCAS El Toro	
Project No. 54506	EarthTech A Tyco International Ltd. Company	

February 2005

Summary Report for PRL 22
Former MCAS El Toro

Appendix B
Validated Laboratory Analytical Data Reports

Sample ID:			LJ308	LJ309
Location ID:			PRL22-HA02	PRL22-HA01
Sample Type:			SS	SS
Sample Depth (ft bgs):			3.0	3.0
Sample Date:			13-Oct-04	13-Oct-04
Parameter	Units	Analytical Method ¹		
Metals				
Cadmium	mg/kg	6010B	0.79	0.63
Lead	mg/kg	6010B	7.1 J	6 J
Nickel	mg/kg	6010B	12 J	11.4 J
Others				
Moisture	%	ASTM D 2216	18	25.3
pH	pH	9040	7.72	8.34

Notes:

¹ = Environmental Protection Agency Method unless otherwise noted.

J = Indicates an estimated value

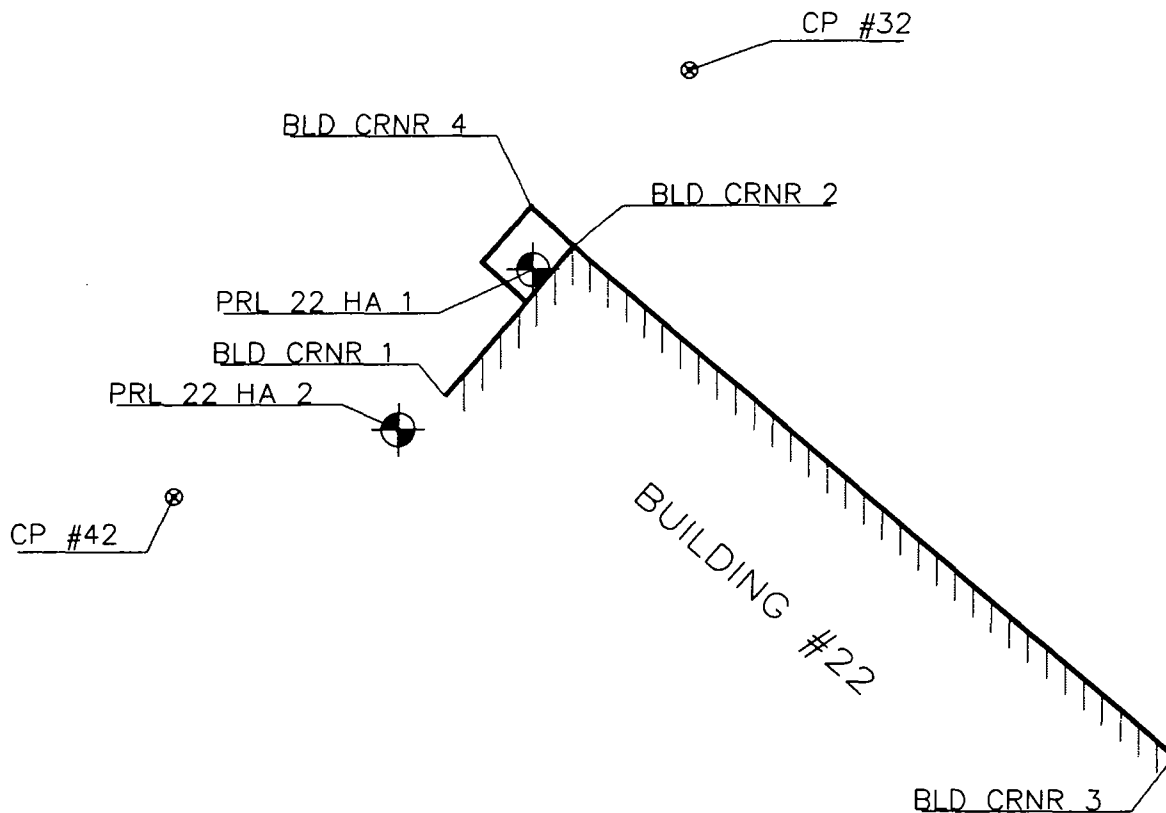
SS = Soil Sample

ASTM = American Society of Testing and Materials

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Summary Report for PRL 22
Former MCAS El Toro

Appendix C Land Surveying Data



PRL AND NOTABLE FEATURES LOCATIONS

STATION	NORTHING	EASTING	ELEVATION
BLD CRNR 1	2193379.78	6108292.32	
BLD CRNR 2	2193410.88	6108319.10	
BLD CRNR 3	2193305.16	6108442.38	
BLD CRNR 4	2193419.03	6108310.01	
CP #32	2193447.23	6108342.78	296.49
CP #42	2193359.04	6108236.80	293.91
PRL 22 HA 1	2193406.06	6108310.44	296.35
PRL 22 HA 2	2193372.93	6108282.75	294.26



DCA CIVIL
ENGINEERING
GROUP

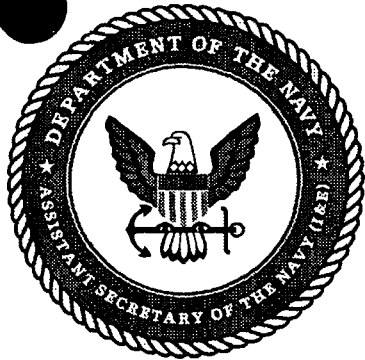
17625 Crenshaw Blvd., Ste. 300
Torrance, California 90504
Tel: (310) 327-0018
Fax: (310) 327-0175
www.dcacivileng.com

POTENTIAL RELEASE LOCATION SKETCH

SCALE: 1" = 40' DATE: 02-16-05

BY: JCL JOB NO.: 04-1058-2227.000-535

Attachment 2
Summary Report
PRL 47



Summary Report for PRL 47, Environmental Baseline Survey

**Former Marine Corps Air Station,
El Toro, California**

February 2005

Prepared for:

**Base Realignment and Closure
Program Management Office West
1230 Columbia Street, Suite 1100
San Diego, CA 92101**

Prepared by:

**Earth Tech, Inc.
841 Bishop Street, Suite 500
Honolulu, HI 96813-3920**

Prepared under:

**Comprehensive Long-Term Environmental Action Navy
Contract Number N62742-94-D-0048, CTO 0104**

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2. SAMPLING AND ANALYSIS SUMMARY	1
3. INVESTIGATION RESULTS	2
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ACRONYMS AND ABBREVIATIONS

AST	aboveground storage tank
bgs	below ground surface
BNI	Bechtel National Inc.
COPCs	chemicals of potential concern
EPA	Environmental Protection Agency
HI	hazard index
MCAS	Marine Corps Air Station
mg/kg	milligram per kilogram
NFEC SW SDIEGO	Naval Facilities Engineering Command, Southwest
pH	negative logarithm of hydrogen ion concentration
PRG	preliminary remediation goal
PRL	Potential release location
RWQCB	Regional Water Quality Control Board
SVOC	semi-volatile organic compound
TPH	Total petroleum hydrocarbons
UST	underground storage tank
VOC	volatile organic compound
VSI	visual site inspection

1. BACKGROUND

Potential Release Location (PRL) 47 is associated with Building 47, located in the northeast quadrant of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). The building was listed as "Dope and Spray Building" in the 1948, 1949, 1950, and 1954 station lists and as "Group Dope and Spray Building" in the 1958 list where surfaces were prepared (doped) using solvents or lacquers and spray-painted. The facility description was "Reserve Training Building" in the 1973 list and "Construction/Weight Handling Equipment Shop" in the 1997 list, which was its last known description before being vacated. Figure 2 shows the plan of Building 47 and the surrounding area.

Three locations of concern are associated with this site: aboveground storage tank (AST) 47, underground storage tank (UST) 47A, and UST 47B. AST 47, a 25-gallon, diesel storage tank (NFECSW SDIEGO 2002) was closed by the Regional Water Quality Control Board (RWQCB) as stated in a letter dated 5 September 2002. UST 47A and UST 47B had the capacity to store 1,500 gallons of diesel fuel. The tanks have been removed, and sampling was conducted for evaluation of release of petroleum hydrocarbons (OHM Corp. 1998). The approximate locations of the tanks and previous sampling locations are shown in Figure 2. Based on the results of this sampling, RWQCB closed USTs 47A and 47B as stated in a letter dated 2 August 1999.

1.1 ISSUES AND CONCERNS

The following issues and concerns associated with this PRL were identified through the records search and visual site inspections (VSIs) conducted in 2002 and 2004:

- A concrete floor sump was identified at this building during the 2002 VSI, which was conducted in support of the environmental baseline survey (EBS), and was found to contain an oil/water mixture (approximately 12 to 15 gallons). The Department of the Navy (DON) conducted sampling of sump contents. Petroleum hydrocarbons, barium, chromium, copper, and lead were detected at or above reporting limits in liquid samples from the sump. Further investigation was recommended.
- Blistered and damaged floor in the Paint Mixing and Storage Room are an indication of a potential release. The floor in the room appears to consist of an approximately 0.5-inch-thick layer of a friable material overlaying a concrete slab. The slab appears to be intact. Further investigation was recommended to assess the potential for a release of paint-related chemicals including volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH), cadmium, chromium, cobalt, lead, and mercury.
- An aircraft wash rack area was identified south of Building 47. A storm drain discharging to a surface ditch drains the concrete area where aircraft washing would have taken place. Further evaluation was recommended for assessing whether a release to the environment occurred due to operations conducted in this area. The chemicals of concern are VOCs and TPHs from solvents and oily residuals, respectively.

A sampling program was proposed to further investigate the issues identified and assess whether hazardous substances or pollutants have released to the environment. A summary of soil sampling activities is presented in Section 2, and the results are presented in Section 3.

2. SAMPLING AND ANALYSIS SUMMARY

Sampling was conducted for evaluation of PRL 47 in October 2004. The sample locations are shown in Figure 2, and a summary of sampling and analyses is provided in Table 1. The specification sheet,

which includes the rationale for the sampling design, is presented in Appendix A of this summary report.

Soil samples were collected from five locations (HA1, HA2, HA3, HA4, and HA5) at PRL 47 using a hand auger (see Figure 2). At HA1, a soil sample was collected adjacent to the sump at 3 feet below ground surface (bgs); at HA2, a soil sample was collected adjacent to the floor drain in a spray booth room at 2 feet bgs; at HA3, a soil sample was collected near the blistered and damaged concrete in the Paint Mixing and Storage Room at 1 foot bgs; at HA4, a soil sample was collected near the sanitary sewer line at 3 feet bgs; and at HA5, a soil sample was collected near the storm drain outfall at a depth of 1 foot bgs. Samples collected at HA1, HA2, HA3, HA4, and HA5 were analyzed for VOCs, SVOCs, TPH, cadmium, chromium, cobalt, lead, and mercury. The results for TPH were reported as TPH as gasoline (TPH_g), TPH as diesel (TPH_d), and TPH as motor oils (TPH_m).

3. INVESTIGATION RESULTS

3.1 ANALYTICAL RESULTS AND QUALITY ASSURANCE

The analytical results for the samples collected at PRL 47, along with the United States Environmental Protection Agency (EPA) Region 9 or California-Modified residential preliminary remediation goals (PRGs), are presented in Table 2 (EPA Region 9 2004). Appendix B presents the validated laboratory analytical data and Appendix C presents the land surveying data.

Some results were qualified as estimated in the data validation process. These qualifications do not affect the findings or conclusions of this report.

3.2 RESULT EVALUATION AND RISK SCREENING

TPHs were detected in soil samples from HA1 and HA5. The contributors to the TPH detections were from the groups of TPHs associated with motor oil diesel fuel. The concentrations of TPHs at HA1 and HA5 are not indicative of a release as they are below the accepted action level of 1,000 milligram per kilogram (mg/kg). Furthermore, the detections are assessed to be representative of the maximum concentrations in soil as the samples were collected adjacent to the nearest sources of release, the sump for HA1 and storm drain outfall for HA5.

None of the detected analytes exceeded residential PRGs in any sample. The detected concentrations of all the metals were also below their respective background values (BNI 1996).

Risk screening was performed to evaluate risks associated with potential exposures to detected analytes in the soil at PRL 47. The methodology for risk screening is presented in Section 3.2 of the Summary Report, and results are presented in Table 3.

The cumulative maximum carcinogenic risk due to potential exposure to maximum detected concentrations of chemicals of potential concern (COPCs) (detected analytes) at PRL 47 is 1.8E-07, which is below the EPA point of departure risk level of 1.0E-06. Cumulative maximum noncancer hazard associated with potential exposure to maximum detected concentrations of COPCs is expressed as a hazard index (HI) of 0.97, which is slightly below the target HI of 1.

4. CONCLUSIONS AND RECOMMENDATIONS

The primary objective of investigations conducted at PRL 47 was to assess whether hazardous substances or pollutants were released to the environment. A review of available records, VSIs, and

soil sampling indicate that no significant release of hazardous substances or pollutants has occurred at PRL 47. This conclusion is supported by the observation that detected concentrations of all chemicals of concern were less than their respective residential PRGs and are not indicative of release. The cancer risk at PRL 47 is less than the EPA point of departure value of 1.0E-06. Additionally, the noncancer risk at this PRL is less than the target HI of 1. Therefore, no further investigation is recommended for PRL 47.

5. REFERENCES

- Bechtel National, Inc. (BNI). 1996. *Final Technical Memorandum, Background and Reference Levels, Remedial Investigations, Marine Corps Air Station El Toro, California*. San Diego, California: NAVFAC EFD SOUTHWEST.
- Environmental Protection Agency, United States (EPA). 2004. *SW-846 On-Line, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. <http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm>. Office of Solid Waste.
- Environmental Protection Agency, United States, Region 9 (EPA Region 9). 2004. EPA Region 9 PRGs [Preliminary Remediation Goals] Tables. San Francisco, California. October.
- OHM Remediation Services Corporation (OHM Corp.). 1998. Underground Storage Tank 47A and 47B, Marine Corps Air Station El Toro, California. Tank Closure and Site Closure Report. May.
- Southwest Division, Naval Facilities Engineering Command (NFECSW SDIEGO). 2002. Information Package, Above Ground Storage Tank 47, Marine Corps Air Station El Toro, California. May.
- Drawing: U.S. Marine Corps Air Station, El Toro, California, Public Works Department. Record Architectural Floor Plan, Building No. 47, Dope and Spray Building.

Tables

Table 1: Sampling and Analyses Summary – PRL 47

Sample Location	EPA ID	Sample Depth (bgs)	Sampling Technique	Analyte Group and Analytical Method ^a								
				VOCs 8260B	SVOCs 8270C	TPH ^b 8015B	Cadmium 6010B	Chromium 6010B	Cobalt 6010B	Lead 6010B	Mercury 7471A	pH 9045C
HA1	LJ307	3 feet	Hand Auger	X	X	X	X	X	X	X	X	X
HA2	LJ306	2 feet	Hand Auger	X	X	X	X	X	X	X	X	X
HA3	LJ341	1 foot	Hand Auger	X	X	X	X	X	X	X	X	X
HA4	LJ305	3 feet	Hand Auger	X	X	X	X	X	X	X	X	X
HA5	LJ304	1 foot	Hand Auger	X	X	X	X	X	X	X	X	X

Notes:

^a Analysis was in general accordance with the listed methods provided in EPA Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

^b Analytical results for TPH were reported as total petroleum hydrocarbons as gasoline (TPH_g), total petroleum hydrocarbons as diesel (TPH_d), and total petroleum hydrocarbons as motor oils (TPH_m).

X = analysis was performed for the specified analyte

-- = analysis was not performed for the specified analyte

Table 2. Analytical Results Summary - PRL 47

Analyte	MCAS El Toro Background Concentrations (95th Quantile) ^a	Residential Soil PRG ^b	Sample Location	PRL 47- HA1	PRL 47-HA2	PRL 47-HA3	PRL 47-HA4	PRL 47-HA5
			Sample Depth	3 feet bgs	2 feet bgs	1 foot bgs	3 feet bgs	1 foot bgs
			Sample Name	LJ307	LJ306	LJ341	LJ305	LJ304
Semi-Volatile Organic Compounds (µg/kg)								
Bis(2-ethylhexyl)phthalate	--	34741		290 J	590 U	610 U	560 U	870 J
Total Petroleum Hydrocarbons (mg/kg)								
TPH as Gasoline	--	--		12 U	9.8 U	0.02 J	10 U	0.02 J
TPH as Diesel	--	--		51	12 U	12 U	11 U	120 J
TPH as Motor Oil	--	--		330	1 J	1 J	1 J	500
Metals (mg/kg)								
Cadmium	2.35	37		0.57	0.53	0.58	0.51	2.6
Chromium	26.9	211		17.8	12.4	15.8	12.8	26.9
Cobalt	6.98	903		18.7	7.5	9.7	7.6	4.5
Lead ^c	15.1	150		6.8	3.6	3.6	3.9	132
Mercury	0.22	23		0.13 J	0.15 J	0.046 J	0.12 J	0.16 J
General Chemistry								
pH	--	--		10.6	8.2	7.49	8	6.38

Notes

U = Indicates the compound or analyte was analyzed for but was not detected at or above the stated limit.

J = Indicates an estimated value

NA = not analyzed

-- = Value does not exist

mg/kg = milligram per kilogram

µg/kg = microgram per kilogram

^a = Source: BNI, 1996^b = Analytical results were compared to EPA Region 9 PRGs (2004), with the exception of lead (see note c).^c = Analytical results for lead were compared to Cal-Modified PRG (2004) since it is significantly more protective than corresponding EPA Region 9 PRGs.

February 2005

Summary Report for PRL 47
Former MCAS El Toro

Table 3: Risk Screening - PRL 47

Chemical of Potential Concern	MCAS El Toro Background Concentrations (95th Quantile) ^a	Maximum EPC ^b (mg/kg)	Carcinogenic PRG ^c (mg/kg)	Noncarcinogenic PRG ^c (mg/kg)	Risk Corresponding to Maximum EPC			
					Carcinogenic		Noncarcinogenic	
					Excess Cancer Risk ^d	Percent Contribution to Cancer Risk ^e	HI ^f	Percent Contribution to Noncancer Risk ^g
Semi-Volatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	--	0.87	3.5E+01	1.2E+03	2.5E-08	14%	0.001	0%
Metals								
Cadmium	2.35	2.6	1.4E+03	3.7E+01	1.9E-09	1%	0.070	7%
Chromium	26.9	26.9	2.1E+02	--	1.3E-07	73%	--	--
Cobalt	6.98	18.7	9.0E+02	1.4E+03	2.1E-08	12%	0.014	1%
Lead ^g	15.1	132	--	1.5E+02	--	--	0.880	91%
Mercury	0.22	0.16	--	2.3E+01	--	--	0.007	1%
Cumulative Maximum Risk					1.8E-07		0.971	

Notes:

^a = Source: BNI, 1996

^b EPC = exposure point concentration

^c US EPA Region 9 PRGs (2004).

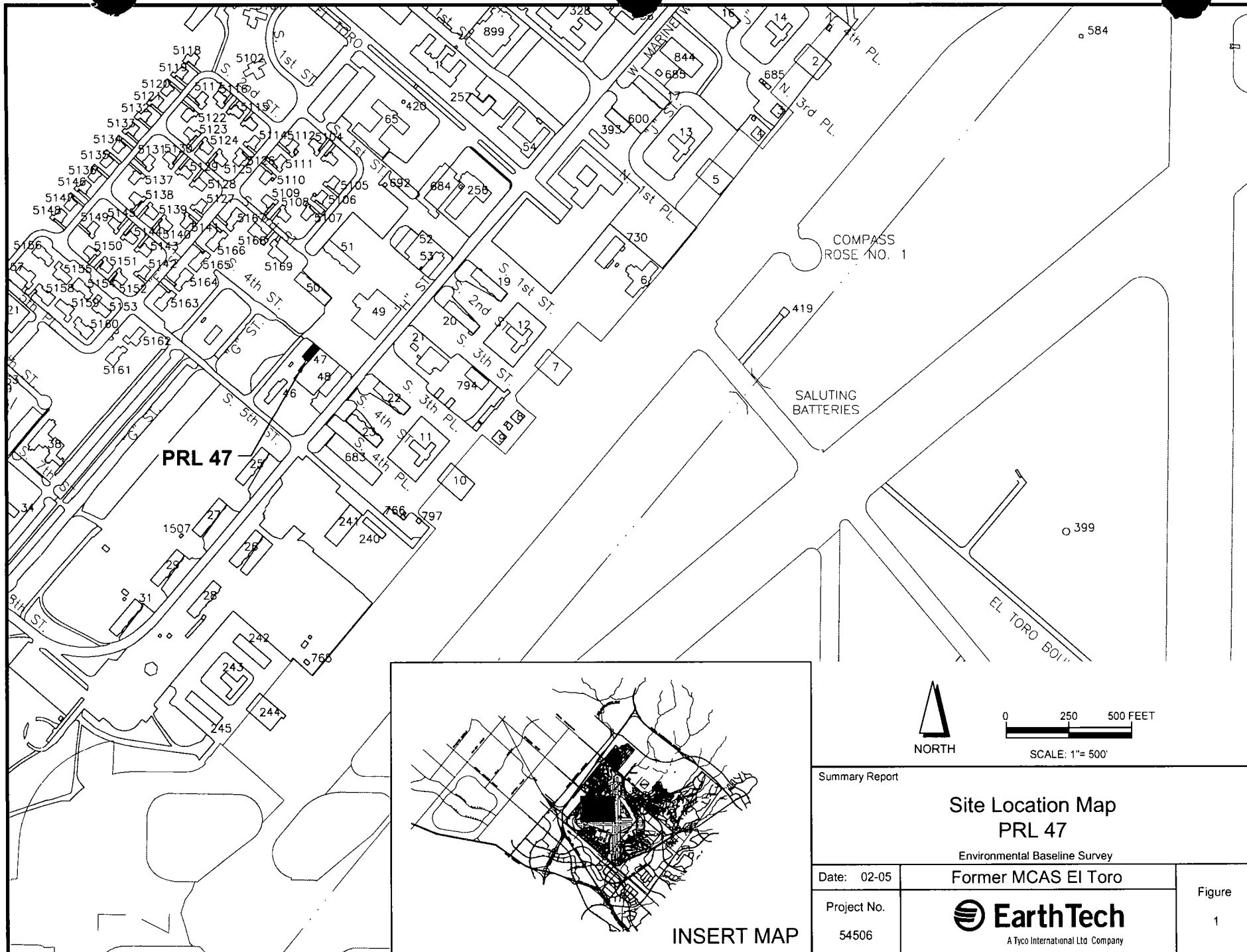
^d Excess cancer risk = 1E-06 x (Maximum EPC/Carcinogenic PRG)

^e With respect to cumulative excess cancer risk or hazard index (including metals with background)

^f HI = Maximum EPC / Noncarcinogenic PRG

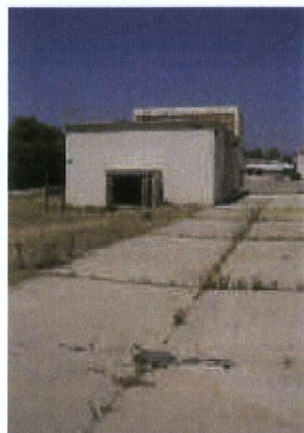
^g Cal-Modified Carcinogenic PRG (2004) was used for lead for excess cancer risk calculation since it is significantly more protective than corresponding EPA Region 9 PRG.

Figures





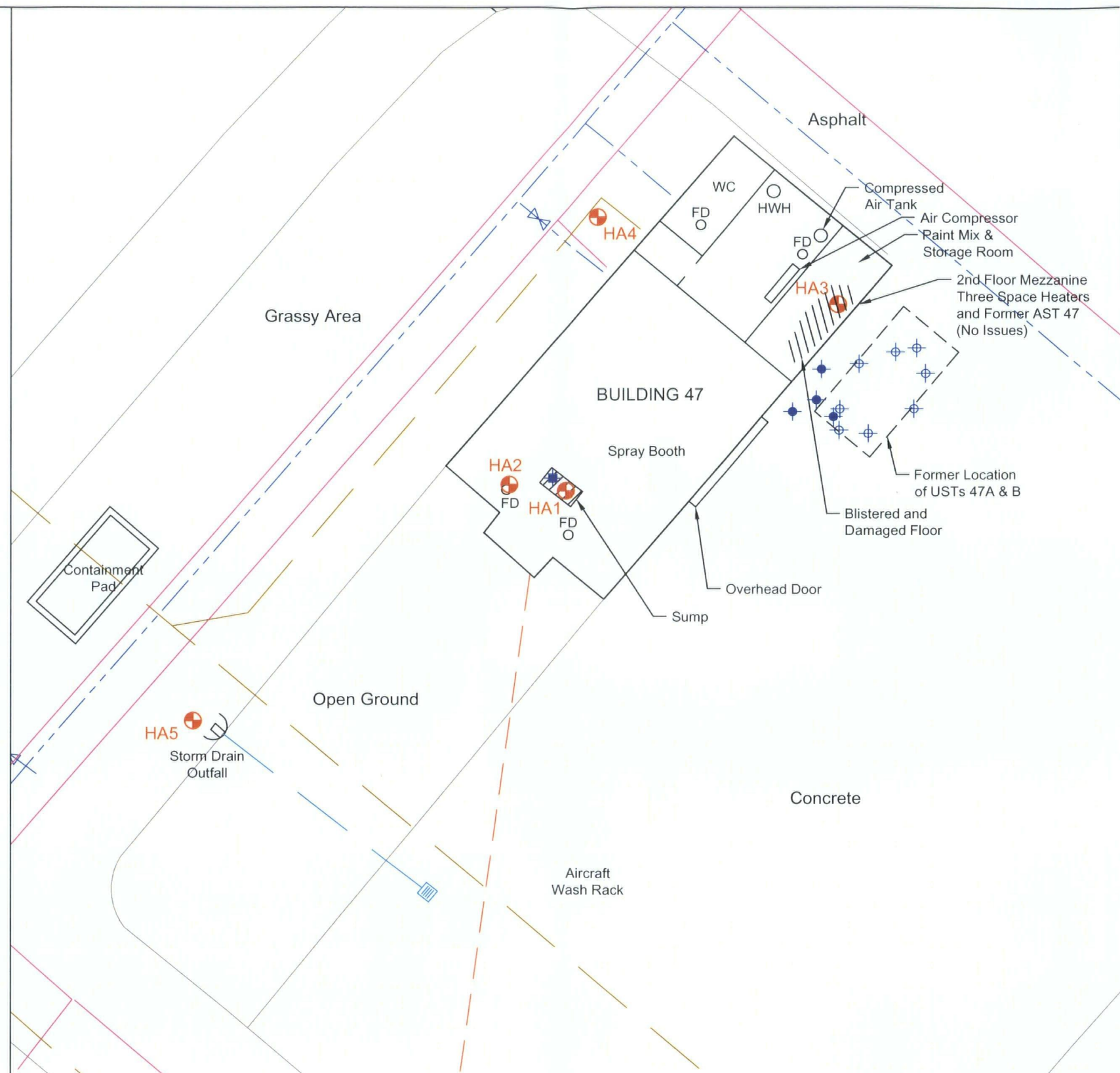
Sump in Spray Booth Area



Concrete Area Southwest of Building with Storm Drain in Foreground (Facing Northeast)



Storm Drain Southwest of Building (Facing Northwest)

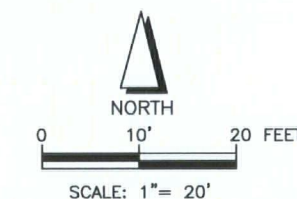


LEGEND:

- Sanitary Sewer
- Water Line
- Natural Gas Line
- Electrical Line
- HA1 2004 Soil Sample Location
- Storm Drain
- Fire Hydrant
- Water Valve
- FD Floor Drain
- WC Restroom
- HWH Hot Water Heater
- Approximate soil sample location (OHM 1998) (Sample Depths: 10 -12 feet bgs; Analytes: TPH, BTEX)
- Approximate soil sample location (OHM 1998) (Sample Depths: 10.5 - 45feet bgs; Analytes: TPH, BTEX)
- Sump content sample (NFECSSW SDIEGO 2002) (Analytes: TPH, VOC, SVOC, Pesticides, PCB)

REFERENCES:

1. OHM Remediation Services Corp. 1998. Underground Storage Tank 47A and 47B, Marine Corps Air Station El Toro, CA. Tank Closure and Site Closure Report. May.
2. Naval Facilities Engineering Command, Southwest Division, San Diego (NFECSSW SDIEGO). 2002. Information Package, Above Ground Storage Tank 47, Marine Corps Air Station El Toro, CA. May.



Note: Features and Interior Layout are Approximate and May Not be to Scale

Summary Report		
Site Plan PRL 47		
Environmental Baseline Survey		
Date: 02-05	Former MCAS El Toro	Figure 2
Project No. 54506	EarthTech A Tyco International Ltd. Company	

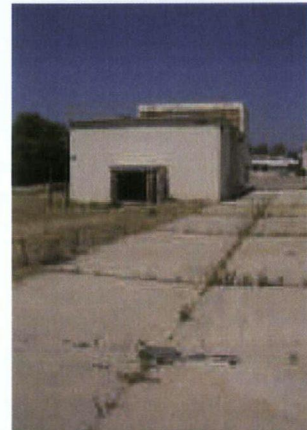
February 2005

Summary Report for PRL 47
Former MCAS El Toro

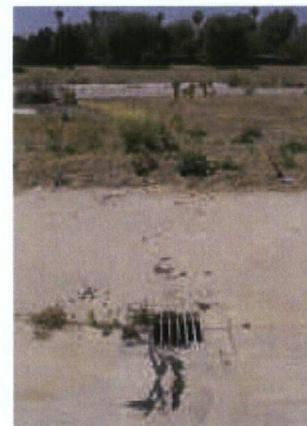
Appendix A
Sampling Design Specification Sheet – PRL 47



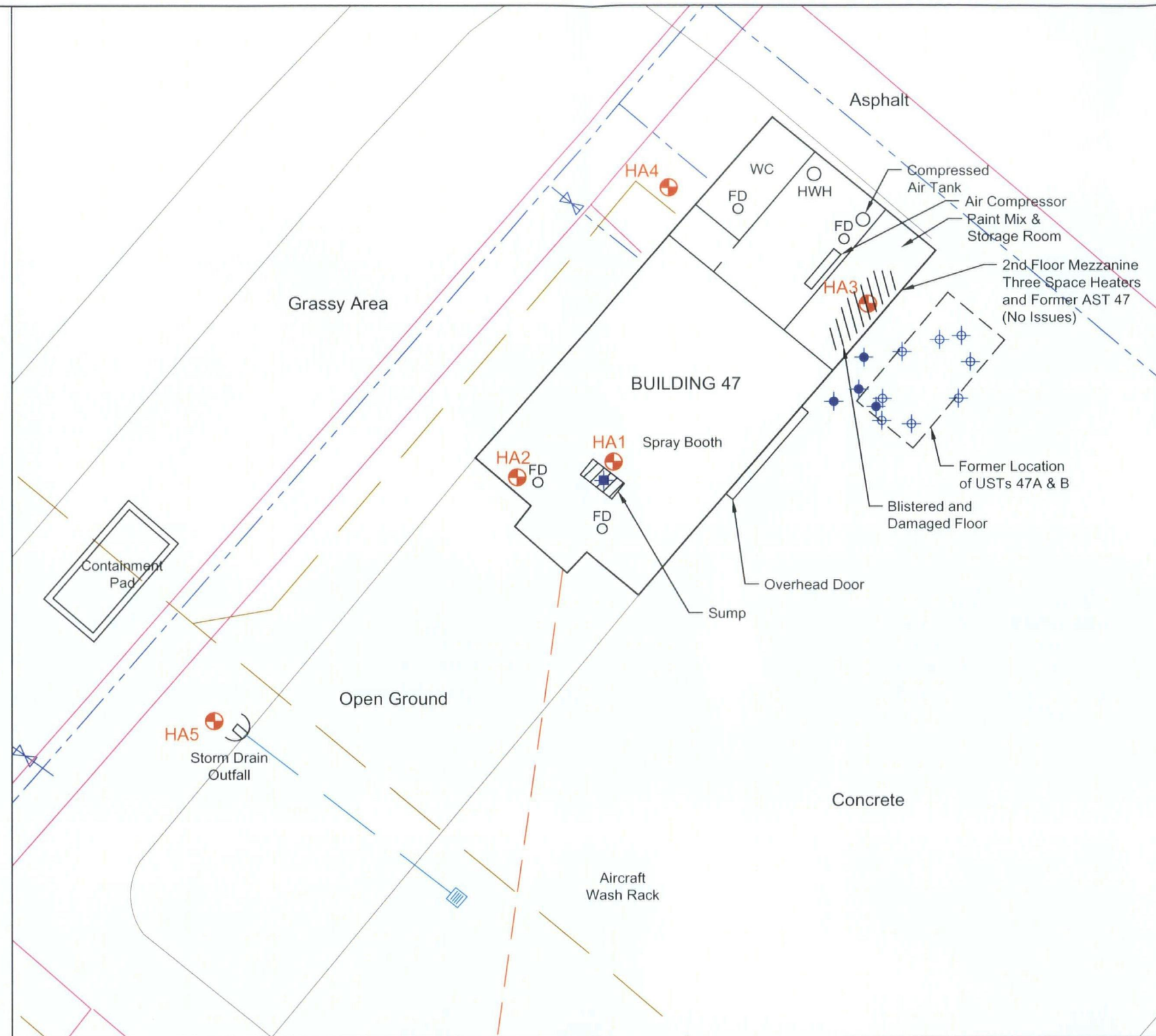
Sump in Spray Booth Area



Concrete Area Southwest of Building with Storm Drain in Foreground (Facing Northeast)



Storm Drain Southwest of Building (Facing Northwest)



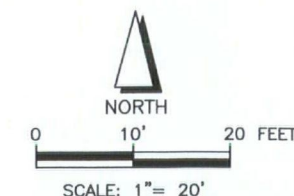
LEGEND:

- Sanitary Sewer
- Water Line
- Natural Gas Line
- Electrical Line
- Existing Infrastructure
- FD Floor Drain
- WC Restroom
- HWH Hot Water Heater

- HA1 Proposed Soil Sample Location
- Fire Hydrant
- Water Valve
- Storm Drain

- Approximate 1997 Soil Sample Locations (Sample Depths: 10 - 12 ft bgs; Analytes: TPH, BTEX)
- Approximate 1997 Soil Boring Locations (Sample Depths: 10.5 - 45 ft bgs; Analytes: TPH, BTEX)
- Approximate 2002 Sample Location (Sample of Sump Contents, Analytes: Metals, TPH, VOC, SVOC, Pesticides, PCB)

Note: Locations of Features and Interior Layout are Approximate



Background

The building was listed as Dope and Spray Building in the 1948, 49, 50 and 54 station lists and as Group Dope and Spray Building in the 1958 list. The facility description was Reserve Training Building in the 1973 list and Construction/Weight Handling Equipment Shop in the 1997 list (last known description before being vacated).

Three locations of concern are associated with this site. AST 47 was a 25-gallon diesel aboveground storage tank, which has been closed by RWQCB in a letter dated 9/5/2002. UST 47A and UST 47B were 1,500-gallon diesel underground storage tanks that have been removed and the sites closed by the RWQCB in a letter dated 8/2/1999.

Previous sampling was conducted by the Navy to investigate LOCs USTs 47A and B, AST 47, and the sump. The storage tank investigations do not coincide with or affect the scope of the proposed investigation. Petroleum hydrocarbons, barium, chromium, copper, and lead were detected at or above reporting limits in liquid samples from the sump. Further investigation was recommended.

Issues/Concerns

1. A concrete floor sump was identified at this building during the 2002 VSI conducted in support of the EBS and found to contain an oil/water mixture (approximately 12 to 15 gallons).
2. Blistered and damaged floor in the Paint Mixing and Storage Room are an indication of a potential release. The floor in the room appears to consist of a layer, approximately 0.5 inches thick, of a friable material overlaying a concrete slab. The slab appears to be in tact.
3. An aircraft wash rack area was identified south of Building 47. Further evaluation is recommended for assessing if a release to the environment occurred due to operations conducted in this area.

Investigation Design

1. Three soil samples are proposed to be collected at locations HA1 and HA2, in the spray booth room. The samples are to be collected approximately 1 foot below the bottom of the sump or drain invert. All samples will be collected using a hand auger and analyzed for VOCs, SVOCs, TPHe, TPHv, metals (lead, cadmium, chromium, cobalt, and mercury).
2. One soil sample is proposed to be collected at location HA3 in the Paint Mixing and Storage Room where blistered and damaged concrete was identified. The sample will be collected at 1 foot bgs by hand auger and analyzed for VOCs, SVOCs, TPHe, TPHv, and metals (lead, cadmium, chromium, cobalt, and mercury).
3. One soil sample is proposed to be collected at HA4, near the sanitary sewer line outside the western wall of Building 47. The sample will be collected 1 foot below the sanitary sewer invert using a hand auger, and analyzed for VOCs, SVOCs, TPHe, TPHv, and metals (lead, cadmium, chromium, cobalt, and mercury). This sample will be used to assess if any releases to the environment occurred due to cracks in the sanitary sewer in the vicinity of the building.
4. One soil sample is proposed to be collected at location HA5 near the storm drain outfall leading from the aircraft wash rack area located south of Building 47. The sample will be collected 1 foot bgs and analyzed for VOCs, TPHe, TPHv.

References

1. Drawing: U.S. Marine Corps Air Station, El Toro, California, Public Works Department. Record Architectural Floor Plan, Building No. 47, Dope and Spray Building.
2. NFECSW SDIEGO. 2002. Information Package, Above Ground Storage Tank 47, Marine Corps Air Station El Toro, CA. May.
3. OHM Remediation Services Corp. 1998. Underground Storage Tank 47A and 47B, Marine Corps Air Station El Toro, CA. Tank Closure and Site Closure Report. May.

Preliminary Assessment

Final

Proposed Sampling Locations PRL 47

Environmental Baseline Survey

Date: 01-05	Former MCAS El Toro	
Project No. 54506	Earth Tech A Tyco International Ltd. Company	

February 2005

Summary Report for PRL 47
Former MCAS El Toro

Appendix B
Validated Laboratory Analytical Data Report

		Sample ID:	LJ304	LJ305	LJ306	LJ307	LJ341
		Location ID:	PRL47-HA05	PRL47-HA04	PRL47-HA02	PRL47-HA01	PRL47-HA03
		Sample Type:	SS	SS	SS	SS	SS
		Sample Depth (ft bgs):	1.0	3.0	2.0	3.0	1.0
		Sample Date:	13-Oct-04	13-Oct-04	13-Oct-04	13-Oct-04	15-Oct-04
Parameter	Unit	Analytical Method ¹					
Volatile Organic Compounds							
1,1,1,2-Tetrachloroethane	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
1,1,1-Trichloroethane	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
1,1,2,2-Tetrachloroethane	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
1,1,2-Trichloroethane	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
1,1-Dichloroethane	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
1,1-Dichloroethene	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
1,2,4-Trichlorobenzene	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
1,2,4-Trichlorobenzene	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
1,2-Dichlorobenzene	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
1,2-Dichloroethane	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
1,2-Dichloropropane	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
1,2-Dichloropropane	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
1,2-Dichlorotetrafluoroethane	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
1,3-Dichlorobenzene	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
1,4-Dichlorobenzene	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
2,4,5-Trichlorophenol	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
2,4,6-Trichlorophenol	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
2,4-Dichlorophenol	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
2,4-Dimethylphenol	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
2,4-Dinitrophenol	µg/kg	8270C	27000 U	2800 U	3000 U	3200 U	3000 U
2,4-Dinitrotoluene	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
2,6-Dinitrotoluene	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
2-Butanone	µg/kg	8260B	97 U	100 U	110 U	120 U	130 U
2-Chloronaphthalene	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
2-Chlorophenol	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
2-Hexanone	µg/kg	8260B	48 U	52 U	57 U	60 U	64 U
2-Methylphenol	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
2-Nitroaniline	µg/kg	8270C	27000 U	2800 U	3000 U	3200 U	3000 U
2-Nitrophenol	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
3,3'-Dichlorobenzidine	µg/kg	8270C	7000 U	740 U	780 U	850 U	800 U
3-Nitroaniline	µg/kg	8270C	27000 U	2800 U	3000 U	3200 U	3000 U

		Sample ID:	LJ304	LJ305	LJ306	LJ307	LJ341
		Location ID:	PRL47-HA05	PRL47-HA04	PRL47-HA02	PRL47-HA01	PRL47-HA03
		Sample Type:	SS	SS	SS	SS	SS
		Sample Depth (ft bgs):	1.0	3.0	2.0	3.0	1.0
		Sample Date:	13-Oct-04	13-Oct-04	13-Oct-04	13-Oct-04	15-Oct-04
Parameter	Unit	Analytical Method ¹					
4,6-Dinitro-2-Methylphenol	µg/kg	8270C	27000 U	2800 U	3000 U	3200 U	3000 U
4-Bromophenyl Phenyl Ether	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
4-Chloro-3-Methylphenol	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
4-Chloroaniline	µg/kg	8270C	11000 U	1100 U	1200 U	1300 U	1200 U
4-Chlorophenyl Phenyl Ether	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
4-Methyl-2-Pentanone	µg/kg	8260B	48 U	52 U	57 U	60 U	64 U
4-Methylphenol	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
4-Nitroaniline	µg/kg	8270C	27000 U	2800 U	3000 U	3200 U	3000 U
4-Nitrophenol	µg/kg	8270C	27000 U	2800 U	3000 U	3200 U	3000 U
Acetone	µg/kg	8260B	97 U	100 U	110 U	120 U	130 U
Benzene	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
Bis(2-Chloro-1-Methylethyl)Ether	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
Bis(2-Chloroethoxy)Methane	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
Bis(2-Chloroethyl)Ether	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
Bis(2-Ethylhexyl)Phthalate	µg/kg	8270C	870 J	560 U	590 U	842	610 U
Bis(2-Ethylhexyl)Phthalate	µg/kg	8270C	870 J	560 U	590 U	842	610 U
Bromodichloromethane	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
Bromoform	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
Bromomethane	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
butyl Benzyl phthalate	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
Carbazole	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
Carbon Disulfide	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
Carbon Tetrachloride	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
Chlorobenzene	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
Chlorodibromomethane	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
Chloroethane	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
Chloroform	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
Chloromethane	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
cis-1,2-Dichloroethene	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
cis-1,3-Dichloropropene	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
Dibenzofuran	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U

		Sample ID:	LJ304	LJ305	LJ306	LJ307	LJ341
		Location ID:	PRL47-HA05	PRL47-HA04	PRL47-HA02	PRL47-HA01	PRL47-HA03
		Sample Type:	SS	SS	SS	SS	SS
		Sample Depth (ft bgs):	1.0	3.0	2.0	3.0	1.0
		Sample Date:	13-Oct-04	13-Oct-04	13-Oct-04	13-Oct-04	15-Oct-04
Parameter	Unit	Analytical Method ¹					
Dichlorodifluoromethane (F12)	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
Diethyl Phthalate	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
Diisopropyl Ether	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
Dimethyl Phthalate	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
Di-N-Butyl Phthalate	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
Di-N-Octyl Phthalate	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
Di-N-Octyl Phthalate	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
Ethylbenzene	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
Ethyl-tert-butyl ether (ETBE)	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
Hexachlorobenzene	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
Hexachlorobutadiene	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
Hexachlorocyclopentadiene	µg/kg	8270C	27000 U	2800 U	3000 U	3200 U	3000 U
Hexachlorocyclopentadiene	µg/kg	8270C	27000 U	2800 U	3000 U	3200 U	3000 U
Hexachloroethane	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
Isophorone	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
Methyl tert-butyl ether	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
Methylene Chloride	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
Nitrobenzene	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
N-Nitroso-Di-N-Propylamine	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
N-Nitrosodiphenylamine	µg/kg	8270C	27000 U	2800 U	3000 U	3200 U	3000 U
Pentachlorophenol	µg/kg	8270C	18000 U	1900 U	2000 U	2200 U	2100 U
Phenol	µg/kg	8270C	5300 U	560 U	590 U	640 U	610 U
Styrene	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
tert-Amyl methyl ether (TAME)	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
tertiary-Butyl alcohol (TBA)	µg/kg	8260B	19 U	21 U	23 U	24 U	26 U
Tetrachloroethene	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
Toluene	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
Total xylenes	µg/kg	8260B	15 U	16 U	17 U	18 U	19 U
trans-1,2-Dichloroethene	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
trans-1,3-Dichloropropene	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
Trichloroethene	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
Trichlorofluoromethane	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U
Vinyl chloride	µg/kg	8260B	4.8 U	5.2 U	5.7 U	6 U	6.4 U

		Sample ID:	LJ304	LJ305	LJ306	LJ307	LJ341
		Location ID:	PRL47-HA05	PRL47-HA04	PRL47-HA02	PRL47-HA01	PRL47-HA03
		Sample Type:	SS	SS	SS	SS	SS
		Sample Depth (ft bgs):	1.0	3.0	2.0	3.0	1.0
		Sample Date:	13-Oct-04	13-Oct-04	13-Oct-04	13-Oct-04	15-Oct-04
Parameter	Unit	Analytical Method ¹					
Metals							
Cadmium	mg/kg	6010B	2.6	0.51	0.53	0.57	0.58
Chromium	mg/kg	6010B	26.9	12.8	12.4	17.8	15.8
Cobalt	mg/kg	6010B	4.5	7.6	7.5	18.7	9.7
Lead	mg/kg	6010B	132 J	3.9 J	3.6 J	6.8 J	--
Mercury	mg/kg	7470A	0.16 UJ	0.12 UJ	0.15 UJ	0.13 UJ	--
Others							
Moisture	%	ASTM D 2216	6	10.5	15.6	22.3	17.4
pH	pH	9040	6.38	8	8.2	10.6	7.49
Petroleum Hydrocarbons							
PHC as Diesel Fuel	mg/kg	8015B DRO	120 J	11 U	12 U	51	12 U
TEPH as Motor Oil	mg/kg	8015B DRO	--	--	--	--	1 J
TPH as Gasoline	mg/kg	8015B GRO	0.02 J	10 U	9.8 U	12 U	11 U
TPH as Motor Oil	mg/kg	8015B DRO	500	1 J	1 J	330	--

Notes:

¹ = Environmental Protection Agency Method unless otherwise noted.

U = Indicates the compound or analyte was analyzed for but was not detected at or above the stated limit.

J = Indicates an estimated value

UJ = Indicates the compound or analyte was analyzed for but was not detected. The sample detection limit is an estimated value.

-- = Not Analyzed

SS = Soil Sample

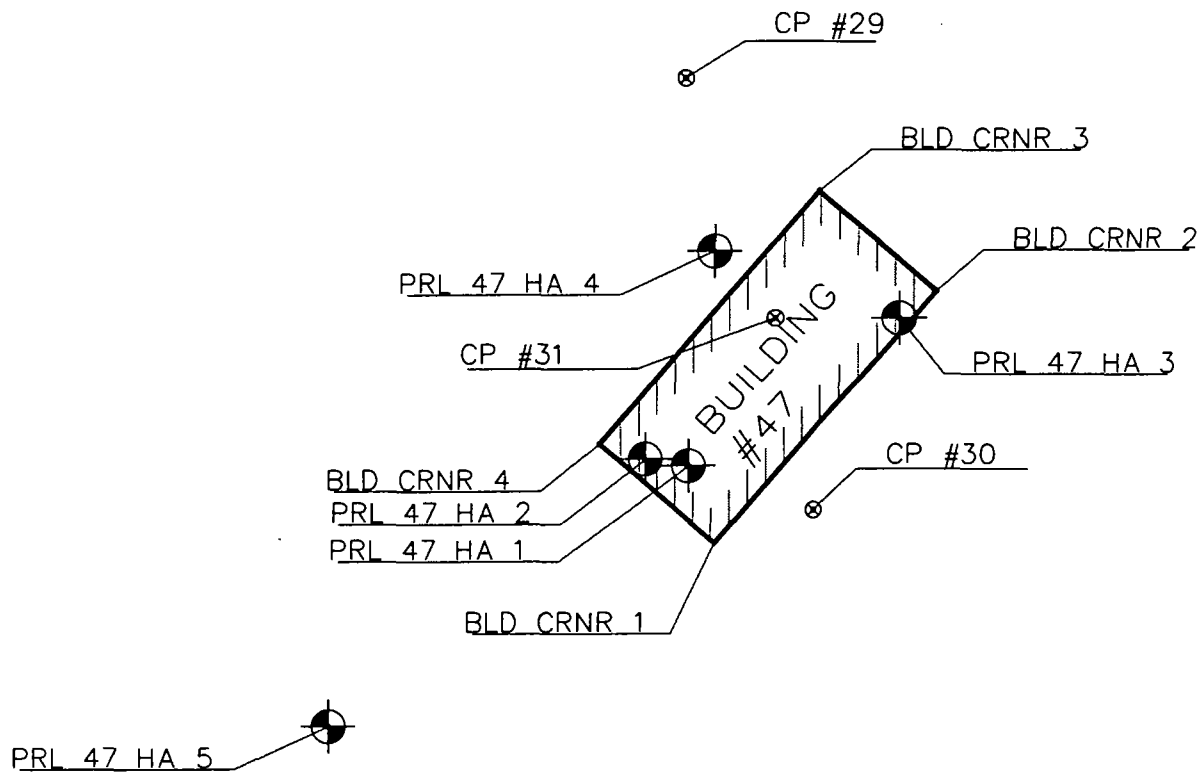
ASTM = American Society of Testing and Materials

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Former MCAS El Toro

Appendix C

Land Surveying Data



PRL AND NOTABLE FEATURES LOCATIONS			
STATION	NORTHING	EASTING	ELEVATION
BLD CRNR 1	2193490.01	6108034.63	
BLD CRNR 2	2193542.43	6108079.70	
BLD CRNR 3	2193563.11	6108055.92	
BLD CRNR 4	2193510.64	6108010.76	
CP #29	2193586.41	6108028.24	291.42
CP #30	2193496.84	6108054.85	291.28
CP #31	2193536.74	6108046.92	291.30
PRL 47 HA 1	2193406.06	6108310.44	296.35
PRL 47 HA 2	2193372.93	6108282.75	294.26
PRL 47 HA 3	2193406.06	6108310.44	296.35
PRL 47 HA 4	2193372.93	6108282.75	294.26
PRL 47 HA 5	2193372.93	6108282.75	294.26



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POTENTIAL RELEASE LOCATION SKETCH

SCALE: 1" = 40' DATE: 02-16-05
BY: JCL JOB NO.: 04-1058-2227.000-535

**Attachment 3
Summary Report
PRL 105**



Summary Report for PRL 105, Environmental Baseline Survey

**Former Marine Corps Air Station,
El Toro, California**

February 2005

Prepared for:
**Base Realignment and Closure
Program Management Office West
1230 Columbia Street, Suite 1100
San Diego, CA 92101**

Prepared by:
**Earth Tech, Inc.
841 Bishop Street, Suite 500
Honolulu, HI 96813-3920**

Prepared under:
**Comprehensive Long-Term Environmental Action Navy
Contract Number N62742-94-D-0048, CTO 0104**

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3. INVESTIGATION RESULTS	2
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APPENDICES

A Sampling Design Specification Sheet – PRL 105	
B Validated Laboratory Analytical Data Reports	
C Land Surveying Data	

ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
BNI	Bechtel National Inc.
EBS	environmental baseline survey
EPA	Environmental Protection Agency
HI	hazard index
LOC	location of concern
MCAS	Marine Corps Air Station
NFECSW SDIEGO	Naval Facilities Engineering Command, Southwest
PCB	polychlorinated biphenyl
PRG	preliminary remediation goal
PRL	potential release location
RCRA	Resource Conservation and Recovery Act
UST	underground storage tank
VSI	visual site inspection

1. BACKGROUND

Potential Release Location (PRL) 105 is associated with Building 105, located in the northeast quadrant of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). The building was listed as "Administration Building" in the 1948 and 1949 station lists. The facility description was "Group Administration Building" in the 1950, 1954, and 1958 station lists, as "Administration Building" in the 1973 list, and as "Dental Clinic, Flight Line Aid Station" in the 1997 list, which is the last known description. Figure 2 shows the plan of Building 105 and the surrounding area.

Three locations of concern (LOC) were originally associated with this site. Polychlorinated biphenyl (PCB) T13 was a transformer that has been removed. The 1994 field survey for a PCB transformer evaluation and a visual sight investigation (VSI) conducted for the 2002 environmental baseline survey (EBS) indicated no evidence of release. Underground storage tank (UST) 105A, a 1,000-gallon fuel oil tank, was removed, and the site was closed by the Regional Water Quality Control Board (RWQCB) as stated in a letter dated 30 October 1996. UST 105B, a 500-gallon tank, was removed, and the site was closed by the Orange County Health Care Agency (OCHCA) as stated in a letter dated 12 November 1996.

1.1 ISSUES AND CONCERNS

The following issues and concerns associated with this PRL were identified through the records search and VSIs conducted in 2002 and 2004:

- Because of the past use of the facility as a dental/medical clinic, X-ray/photographic development chemicals and dental amalgam may have been released to the sanitary sewer. Further evaluation is recommended to assess whether hazardous materials or pollutants have released to the environment as a result of past operations at this facility.

Previous sampling was conducted to investigate LOCs UST105, UST105A, and UST105B. The sampling locations and analyte lists are presented in Figure 2; however, they do not coincide with the current issues and concerns.

A sampling program was proposed to further investigate the issues identified and assess whether hazardous substances or pollutants have released to the environment. In addition, samples of materials from the P-traps for the sinks in the examination rooms were collected for characterization. The chemicals of concern include heavy metals namely silver from the X-ray/photographic development chemicals, and mercury, silver, tin, and copper, which are elements found in dental amalgam, and mercury found in thermometers used in medical clinics. A summary of soil sampling activities is presented in Section 2, and the results are presented in Section 3.

2. SAMPLING AND ANALYSIS SUMMARY

Sampling was conducted for evaluation of PRL 105 in October 2004. The sample locations are shown in Figure 2, and a summary of sampling and analyses is provided in Table 1. The specification sheet, which includes the rationale for the sampling design, is presented in Appendix A of this summary report.

One soil sample was collected at location HA1 at PRL 105. The sample was collected near the sanitary sewer line outside the southern wing of Building 105. The sample was collected at a depth of 3.5 feet below ground surface (bgs) using a hand auger and was analyzed for mercury, silver, tin, and copper.

Three drain samples (DS1, DS2, and DS3) were collected from the sink P-traps in the examination rooms located in the south wing and analyzed for mercury, silver, tin, and copper.

3. INVESTIGATION RESULTS

3.1 ANALYTICAL RESULTS AND QUALITY ASSURANCE

The results for detected analytes for the samples collected at PRL 105, along with the United States Environmental Protection Agency (EPA) Region 9 or California-Modified residential preliminary remediation goals (PRGs), are presented in Table 2 (EPA Region 9 2004). The table also includes the corresponding Federal and State regulatory concentrations for determining the hazardous status of the material. Appendix B presents the validated laboratory analytical data and Appendix C presents the land surveying data.

Some results were qualified as estimated in the data validation process. These qualifications do not affect the findings or conclusions of this report.

3.2 RESULT EVALUATION AND RISK SCREENING

The detected copper and tin concentrations in the soil sample were less than the MCAS El Toro background value and the tin concentration was also below the PRG. No mercury or silver was detected in the soil sample.

All of the drain samples (DS1, DS2, and DS3) collected from the P-traps beneath the sinks in the examination rooms contained copper and mercury concentrations exceeding the corresponding Total Threshold Limit Concentrations, classifying the material as a California-designated hazardous waste. All three samples also exceed the regulatory limit for mercury by a factor greater than 20, which is likely to qualify them as Federally designated hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA).

Sample DS2 contained silver at a concentration exceeding the Federal regulatory level for toxicity characteristics by a factor of 20 and the Soluble Threshold Limit Concentration by a factor of 10, thereby making it likely that the material will qualify as both RCRA and California hazardous waste.

Risk screening was performed to evaluate risks associated with potential exposures to chemicals of potential concern (detected analytes) in the soil at PRL 105. The methodology for risk screening is presented in Section 3.2 of the Summary Report, and results are presented in Table 3.

The cumulative maximum noncarcinogenic hazard associated with potential exposure to maximum detected concentrations of copper and tin is expressed as a hazard index (HI) of 0.0024, which is below the target HI of 1.

4. CONCLUSIONS AND RECOMMENDATIONS

The primary objective of investigations conducted at PRL 105 was to assess whether hazardous substances or pollutants were released to the environment. A review of available records, VSIs, and soil sampling indicate that no significant release of hazardous substances or pollutants has occurred at PRL 105. This conclusion is supported by the observation that detected concentrations of all chemicals of concern were less than their respective residential PRGs and are not indicative of a release. The noncarcinogenic risk at this PRL is less than the target HI of 1. Therefore, no further investigation (NFI) is recommended for PRL 105.

The material collected from the P-traps of the sink drains in the examination rooms qualifies as California-designated hazardous waste and likely qualifies as RCRA hazardous waste due to concentrations of copper, mercury, and silver. However, the P-traps were emptied of all loose material during sampling of the sink drains; therefore, no further action is required.

5. REFERENCES

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Environmental Protection Agency, United States (EPA). 2004. *SW-846 On-Line, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*.
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Drawing: U.S. Marine Corps Air Station, El Toro California, Public Works Department. Record Architectural Floor Plan, Building 105, Administration.

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Geofon, Inc. 2003. UST Closure Report, Removal and Disposal of UST 105B at the Former Marine Corps Air Station, El Toro, CA. October.

Tables

Table 1: Sampling and Analyses Summary - PRL 105

Sample Location	EPA ID	Sample Depth (bgs)	Sampling Technique	Analyte Group and Analytical Method ^a			
				Mercury 7471A	Silver 6010B	Tin 6010B	Copper 6010B
HA1	LJ334	3.5	Hand Auger	X	X	X	X
DS1	LJ345	NA	Jar Sample	X	X	X	X
DS2	LJ346	NA	Jar Sample	X	X	X	X
DS3	LJ347	NA	Jar Sample	X	X	X	X

Notes:

^a Analysis was in general accordance with the listed methods provided in EPA Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

NA = Not Applicable

X = analysis was performed for the specified analyte

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Table 2. Analytical Results Summary - PRL 105

Analyte	MCAS El Toro Background Concentrations (95th Quantile) ^a	Residential Soil PRG ^b	RCRA Hazardous Waste		California Hazardous Waste			Sample Location	PRL 105-HA1	PRL 105-DS1	PRL 105-DS2	PRL 105-DS3
			RL ^c (mg/L)	20 x RL ^d (mg/kg)	TTLC ^e (mg/kg)	STLC ^f (mg/L)	10 x STLC ^g (mg/kg)	Sample Depth	3.5 feet bgs	Sink Drain	Sink Drain	Sink Drain
								Sample Name	LJ334	LJ345	LJ346	LJ347
Metals (mg/kg)												
Copper	6.41E+00	3.1E+03	--	--	2.5E+03	2.5E+01	2.5E+02		4.1	7.57E+04	3.05E+04	8.05E+04
Silver	5.39E-01	3.9E+02	5.0E+00	1.0E+02	5.0E+02	5.0E+00	5.0E+01		49.7	1.93E+01	1.53E+02	5.80E+00
Tin	--	4.7E+04	--	--	--	--	--		U	1.36E+04	3.22E+03	4.09E+02
Mercury	2.2E-01	2.3E+01	2.0E-01	4.0E+00	2.0E+01	2.0E-01	2.0E+00		U	2.37E+05	3.94E+03	1.17E+04

Notes

-- = Value does not exist

U = not detected above laboratory detection limit

^a Source: BNI, 1996

^b Analytical results were compared to EPA Region 9 PRGs (2004).

^c Maximum concentration (mg/L) of contaminants for the toxicity characteristic determined by the Toxicity Characteristic Leaching Procedure (TCLP).

^d Correction factor for estimating whether the concentration in a solid will exceed the RL.

^e Total threshold limit concentration (mg/kg) (California Code of Regulations Title 22).

^f Soluble Threshold Limit Concentration in milligrams per liter of waste extract determined using the Waste Extraction Test (WET).

^g Correction factor for estimating whether the concentration in a solid will exceed the STLC.

February 2005

Summary Report for PRL 105
Former MCAS El Toro

Table 3: Risk Screening Results - PRL 105

Chemical of Potential Concern	MCAS El Toro Background Concentrations (95th Quantile) ^a	Maximum EPC ^b (mg/kg)	Carcinogenic PRG ^c (mg/kg)	Noncarcinogenic PRG ^c (mg/kg)	Risk Corresponding to Maximum EPC			
					Carcinogenic		Noncarcinogenic	
					Excess Cancer Risk ^d	Percent Contribution to Cancer Risk ^e	HI ^f	Percent Contribution to Noncancer Risk ^e
Metals								
Copper	6.41	4.1	--	3.1E+03	--	--	0.0013	56%
Tin	--	49.7	--	4.7E+04	--	--	0.0011	44%
Cumulative Maximum Risk					0.0E+00		0.0024	

Notes:

^a = Source: BNI, 1996

^b EPC = exposure point concentration

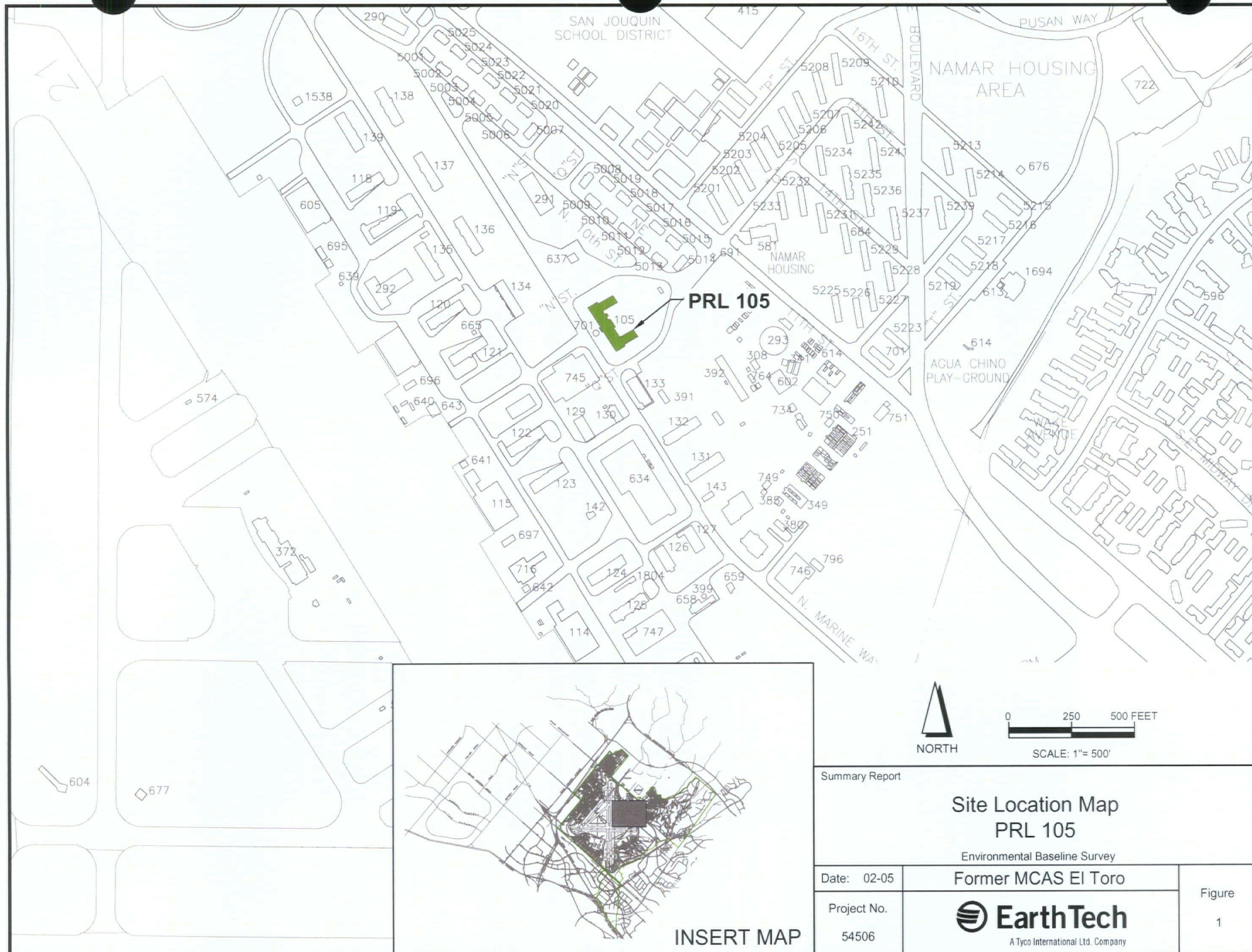
^c US EPA Region 9 PRGs (2004).

^d Excess cancer risk = 1E-06 x (Maximum EPC/Carcinogenic PRG)

^e With respect to cumulative excess cancer risk or hazard index (including metals with background)

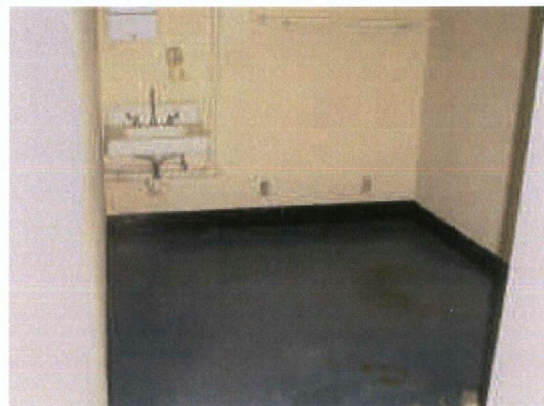
^f HI = Maximum EPC / Noncarcinogenic PRG

Figures





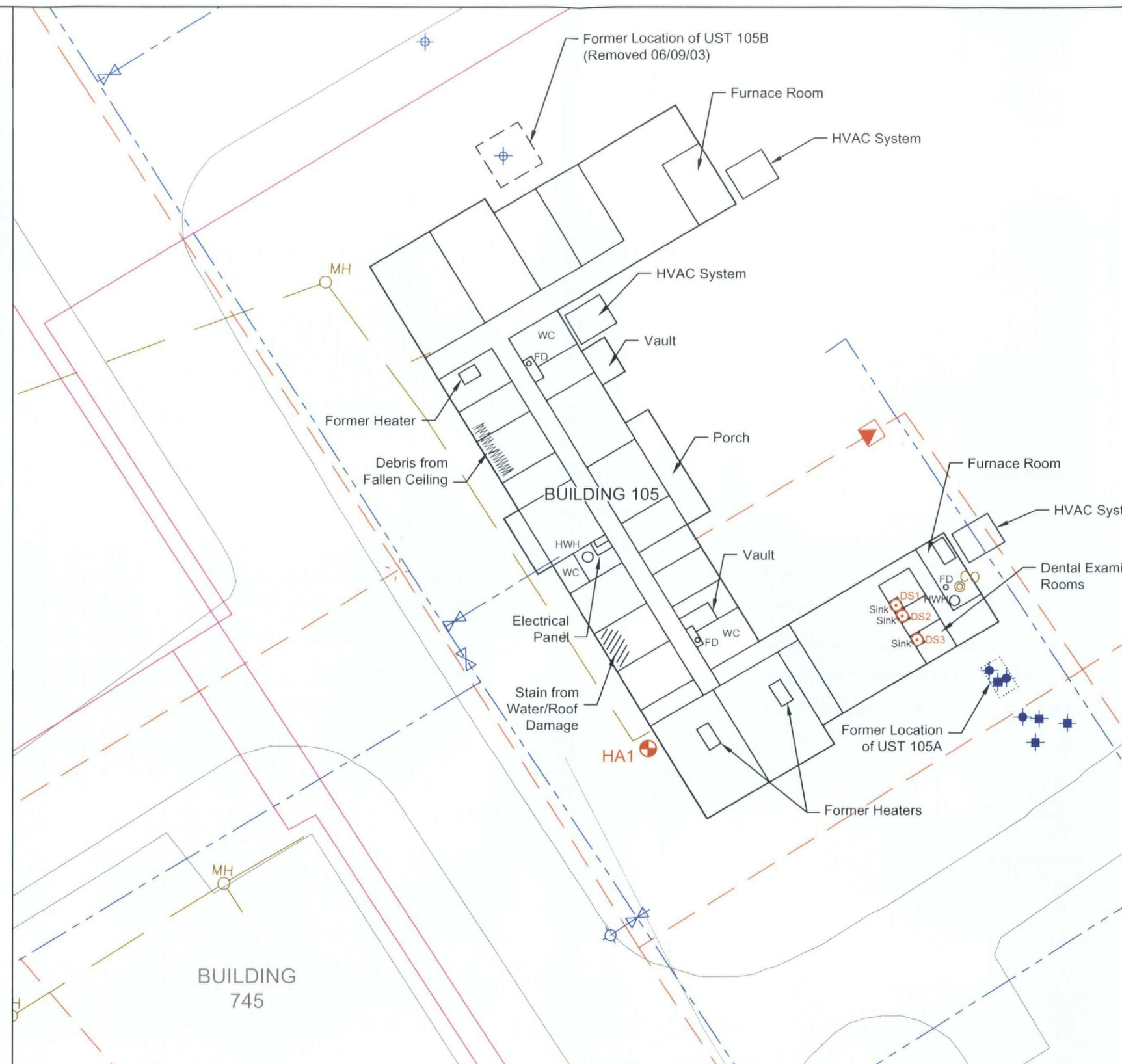
Rear View of Building 105
(Facing West)



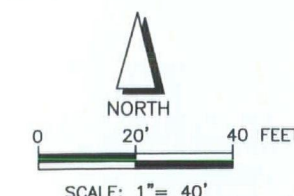
Examination Room in South Wing
(Facing West)



Room Near North Wing Identified in Historical
Drawing as Former Heater Room with Furnace
(Facing Southwest)



Note: Features and Interior Layout are Approximate and
May Not be to Scale



LEGEND:

- Sanitary Sewer
- Water Line
- Natural Gas Line
- Electrical Line
- HA1 2004 Soil Sample Location
- MH Manhole
- CO Clean Out
- Transformer
- Fire Hydrant
- Water Valve
- DS3 2004 Drain Sample Location
- S Sink
- FD Floor Drain
- HWH Hot Water Heater
- WC Restroom
- HVAC Heating, Ventilation, Air Conditioning
- Approximate soil sample location (Geofon 2003)
(Sample Depths: 2 and 9 feet bgs;
Analytes: TPH, VOCs)
- Approximate soil sample location (JTL 1992)
(Tank Removal Confirmation Samples;
Analytes: TPH, BTEX, VOCs)
- Approximate soil sample location (OHM 1996)
(Sample Depths: 10 to 20 feet bgs;
Analytes: TPH, BTEX)

REFERENCES:

1. Geofon, Inc. 2003. UST Closure Report, Removal and Disposal of UST 105B at the Former Marine Corps Air Station (MCAS), El Toro, California. Diamond Bar, CA. October.
2. JTL Environmental Group Inc. (JTL). 1992. Closure Report, Final Report Tank #105, El Toro Marine Base, El Toro, California. Anaheim Hills, CA. January.
3. OHM Remediation Services Corp. (OHM). 1996. Site Assessment Report, Former Underground Storage Tank, Site 105A, MCAS, El Toro, California. San Diego, CA. September.

Summary Report

Site Plan PRL 105

Environmental Baseline Survey

Date: 02-05	Former MCAS El Toro	Figure
Project No. 54506	EarthTech A Tyco International Ltd. Company	2

February 2005

Summary Report for PRL 105
Former MCAS El Toro

Appendix A
Sampling Design Specification Sheet – PRL 105



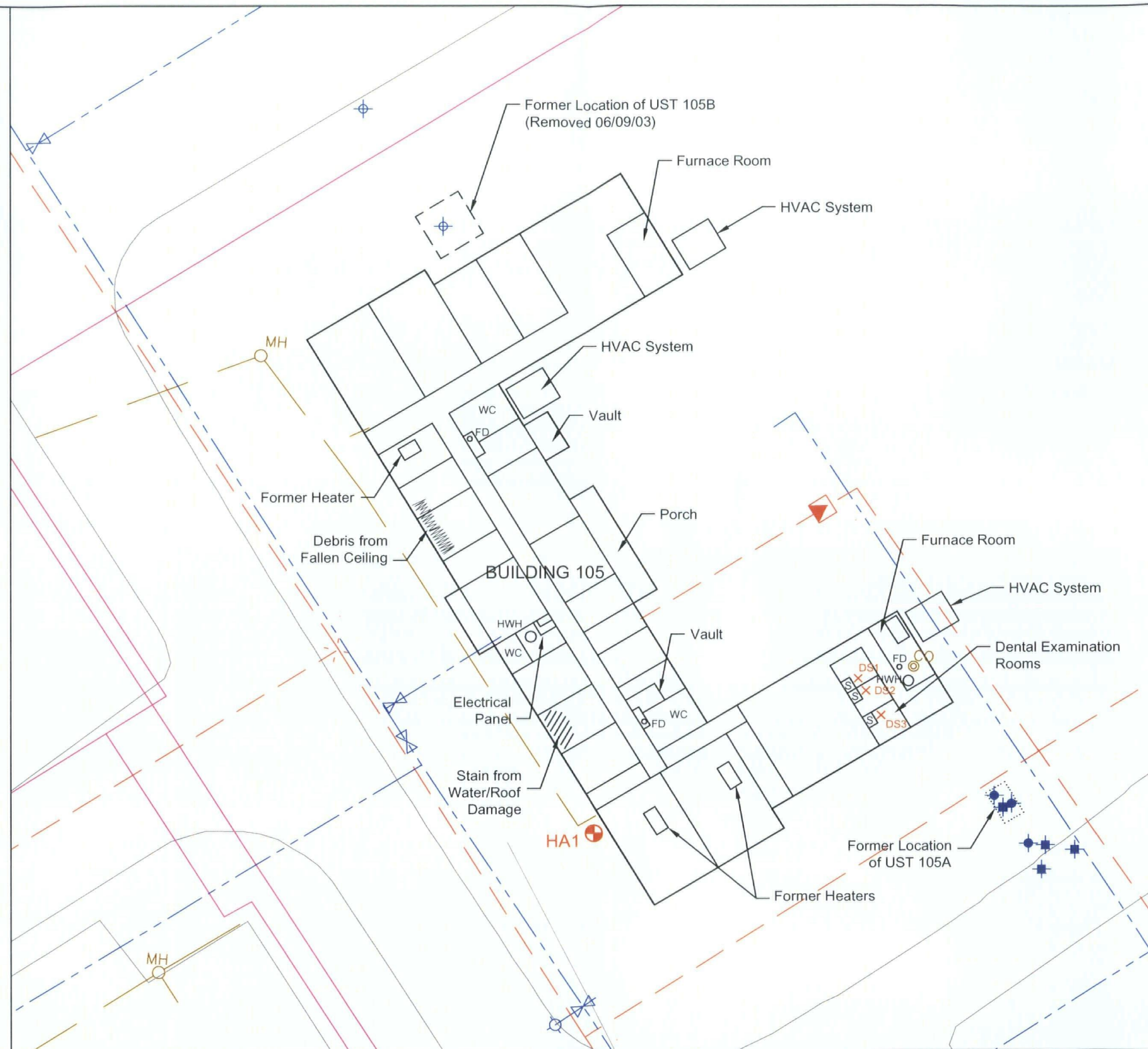
Rear View of Building 105
(Facing West)



Examination Room in South Wing
(Facing West)



Room Near North Wing Identified in Historical
Drawing as Former Heater Room with Furnace
(Facing Southwest)



LEGEND:

- Sanitary Sewer
- Water Line
- Natural Gas Line
- Electrical Line
- Existing Infrastructure
- HA1 Proposed Soil Sample Location
- MH Manhole
- DS3 Proposed Drain Sample Location

- Transformer
- Fire Hydrant
- Water Valve
- Clean Out
- S Sink
- FD Floor Drain
- HWH Hot Water Heater
- WC Restroom
- HVAC Heating, Ventilation, Air Conditioning

- Approximate soil sample location (Geofon 2003)
(Sample Depths: 2 and 9 feet bgs;
Analytes: TPH, VOCs)
 - Approximate soil sample location (JTL 1992) (Tank Removal
Confirmation Samples;
Analytes: TPH, BTEX, VOCs)
 - Approximate soil sample location (OHM 1996)
(Sample Depths: 10 to 20 feet bgs;
Analytes: TPH, BTEX)
- Note: Locations of Features and Interior
Layout are Approximate
- 0 20' 40' FEET
SCALE: 1" = 40'
- NORTH

Background

The building was listed as Administration Building in the 1948 and 1949 station lists. The facility description was Group Administration Building in the 1950, 1954, and 1958 station lists, as Administration Building in the 1973 list, and as Dental Clinic in the 1997 list. The last known description was Dental Clinic, Flight Line Aid Station.

Three locations of concern were associated with this site. PCB T13 was a transformer that has been removed. The 1994 field survey for PCB transformer evaluation and VSI conducted for the 2002 EBS indicated no evidence of release. UST 105A was a 1,000-gallon fuel oil underground storage tank that has been removed and the site closed by the RWQCB in a letter dated 30 October 1996. UST 105B was a 500-gallon underground storage tank that has been removed and the site closed by OCHCA in a letter dated 12 November 1996.

Previous sampling was conducted to investigate LOCs UST105, UST105A, and UST105B. However, those investigations do not coincide with or affect the scope of the proposed investigation.

Issues/Concerns

1. Due to the past use of the facility as a dental/medical clinic, X-ray/photographic development chemicals and/or dental amalgam may have been released to the sanitary sewer. Further evaluation is recommended to assess whether releases of waste have occurred to the environment as a result of past operations at this facility.

Investigation Design

1. Collection of three drain samples (DS1, DS2, and DS3) is proposed from the sink p-traps in the examination rooms located in the south wing. Samples will be analyzed for mercury, silver, tin and copper.

2. Collection of one soil sample is proposed at location HA1, near the sanitary sewer line outside the southern wing of Building 105. The sample will be collected 1 foot below the sanitary sewer invert using a hand auger and analyzed for mercury, silver, tin and copper. This sample will be used to assess if any releases to the environment occurred due to cracks in the sanitary sewer in the vicinity of the building.

References

1. Drawing: U.S. Marine Corps Air Station, El Toro California, Public Works Department. Record Architectural Floor Plan, Building 105, Administration.
2. Phillips National, Inc. 1992. Closure Report Tank #105. Marine Corps Air Station, El Toro, CA. January.
3. OHM Remediation Services Corp. 1996. Site Assessment Report, Former Underground Storage Tank Site 105A, Marine Corps Air Station, El Toro, CA. September.
4. Geofon, Inc. 2003. UST Closure Report, Removal and Disposal of UST 105B at the Former Marine Corps Air Station, El Toro, CA. October.
5. JTL Environmental Group Inc. (JTL). 1992. Closure Report, Final Report Tank #105, El Toro Marine Base, El Toro, California. Anaheim Hills, CA. January.

Preliminary Assessment Final

**Proposed Sampling Locations
PRL 105**

Environmental Baseline Survey

Date: 01-05	Former MCAS El Toro
Project No. 54506	EarthTech A Tyco International Ltd. Company

February 2005

Summary Report for PRL 105
Former MCAS El Toro

Appendix B
Validated Laboratory Analytical Data Report

Sample ID:			LJ334	LJ345	LJ346	LJ347
Location ID:			PRL105-HA01	PRL105-DS01	PRL105-DS02	PRL105-DS03
Sample Type:			SS	DS	DS	DS
Sample Depth (ft bgs):			3.5	NA	NA	NA
Sample Date:			15-Oct-04	4-Dec-04	4-Dec-04	4-Dec-04
Parameter	Unit	Analytical Method ¹				
Metals						
Copper	mg/kg	6010B	4.1	75700	30500	80500
Silver	mg/kg	6010B	0.55 U	19.3	153	5.8
Tin	mg/kg	6010B	49.7 J	13600	3220	409
Mercury	mg/kg	7470A	0.021 J	--	--	--
Mercury	mg/kg	7471A	--	237000	3940	11700
Others						
Moisture	%	ASTM D 2216	9.3	0.8	12.5	5

Notes:

¹ = Environmental Protection Agency Method unless otherwise noted.

U = Indicates the compound or analyte was analyzed for but was not detected at or above the stated limit.

J = Indicates an estimated value

SS = Soil Sample

DS = Drain Sample

NA = Not Applicable

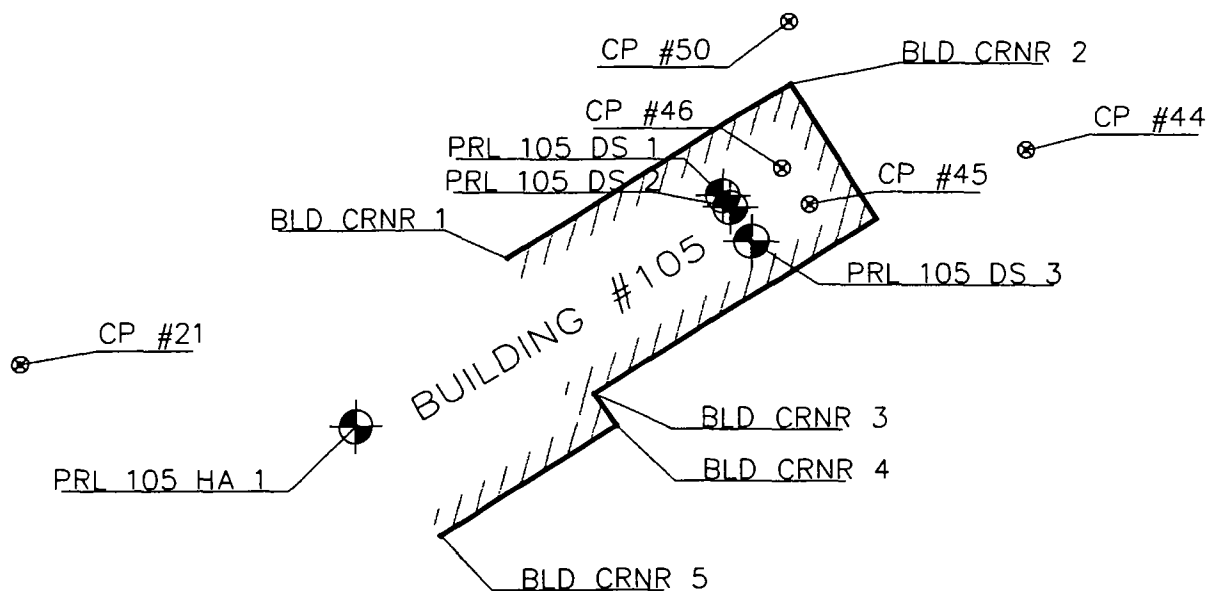
ASTM = American Society of Testing and Materials

February 2005

Summary Report for PRL 105
Former MCAS El Toro

Appendix C

Land Surveying Data



CP #43

PRL AND NOTABLE FEATURES LOCATIONS			
STATION	NORTHING	EASTING	ELEVATION
BLD CRNR 1	2193731.07	6114657.60	
BLD CRNR 2	2193767.50	6114715.09	
BLD CRNR 3	2193702.98	6114675.25	
BLD CRNR 4	2193696.36	6114679.76	
BLD CRNR 5	2193673.63	6114644.02	
CP #21	2193709.32	6114556.85	406.74
CP #43	2193570.15	6114649.96	407.66
CP #44	2193753.88	6114763.42	412.58
CP #45	2193742.45	6114719.04	412.06
CP #46	2193749.98	6114713.36	411.97
PRL 105 DS 1	2193744.08	6114701.56	414.12
PRL 105 DS 2	2193741.68	6114703.04	414.47
PRL 105 DS 3	2193734.68	6114707.42	414.02
PRL 105 HA 1	2193696.32	6114625.97	409.64



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www.dcacivileng.com

POTENTIAL RELEASE LOCATION SKETCH

SCALE: 1" = 40' DATE: 02-16-05
BY: JCL JOB NO.: 04-1058-2227.000-535

**Attachment 4
Summary Report
PRL 118**



Summary Report for PRL 118, Environmental Baseline Survey

**Former Marine Corps Air Station,
El Toro, California**

February 2005

Prepared for:

**Base Realignment and Closure
Program Management Office West
1230 Columbia Street, Suite 1100
San Diego, CA 92101**

Prepared by:

**Earth Tech, Inc.
841 Bishop Street, Suite 500
Honolulu, HI 96813-3920**

Prepared under:

**Comprehensive Long-Term Environmental Action Navy
Contract Number N62742-94-D-0048, CTO 0104**

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1.1 Issues and Concerns	1
2. SAMPLING AND ANALYSIS SUMMARY	1
3. INVESTIGATION RESULTS	2
3.1 Analytical Results and Quality Assurance	2
3.2 Result Evaluation and Risk Screening	2
4. CONCLUSIONS AND RECOMMENDATIONS	2
5. REFERENCES	2

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B Validated Laboratory Analytical Data Reports	
C Land Surveying Data	

ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
EBS	environmental baseline survey
EPA	Environmental Protection Agency
MCAS	Marine Corps Air Station
NFEC SW SDIEGO	Naval Facilities Engineering Command, Southwest
PCB	polychlorinated biphenyl
PRG	preliminary remediation goal
PRL	potential release location
TPH	total petroleum hydrocarbons
VOC	volatile organic compound
VSI	visual site inspection

1. BACKGROUND

Potential Release Location (PRL) 118 is associated with Building 118, located in the northeast quadrant of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). The building was listed as "Storehouse" in the 1948, 1949, 1950, 1954, and 1958 station lists and as "Storehouse, Marine Corps" in the 1973 list. The facility description was "Maintenance Hangar 01 Space" in the 1997 list, which was the last known description. Figure 2 shows the plan of Building 118 and the surrounding area.

One location of concern was associated with this site. Polychlorinated biphenyl (PCB) T16 was a transformer that was replaced with a non-PCB transformer. The 1994 field survey for the evaluation of PCB T16 indicated no evidence of release. Additionally, no PCB releases were identified through the records search or visual site inspections (VSIs) conducted in support of the environmental baseline survey (EBS) (Earth Tech 2003).

1.1 ISSUES AND CONCERNS

The following issues and concerns associated with this PRL were identified through the records search and VSIs conducted in 2002 and 2004:

- A wash rack was identified near the north end of the building during the 2002 VSI, which was conducted in support of this EBS. This wash rack has not been evaluated for potential releases of wastes. The outfall of the wash area is unknown, and cracks in the concrete of the wash rack were noted.
- A floor drain was identified adjacent to the hot water heater during the 2002 VSI. However, it appears to have been used solely for overflow drainage from the hot water heater. Based on this and on the historical use of the building, there is no concern of a release to the environment via this floor drain.

A sampling program was proposed to further investigate the issues identified and assess whether hazardous substances or pollutants have released to the environment. The chemicals of concern associated with the wash rack are VOCs from solvents and TPHs from residual oils and lubricants washed from vehicles. A summary of soil sampling activities is presented in Section 2, and the results are presented in Section 3.

2. SAMPLING AND ANALYSIS SUMMARY

Sampling was conducted for evaluation of PRL 118 in October 2004. The sample locations are shown in Figure 2, and a summary of sampling and analyses is provided in Table 1. The specification sheet, which includes the rationale for the sampling design, is presented in Appendix A of this summary report.

A soil sample was collected from one location (HA1) near the floor drain in the wash rack area north of Building 118. The sample was collected at 2.5 feet below ground surface (bgs) using a hand auger and analyzed for volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH). The results for TPH were reported as TPH as gasoline (TPH_g), TPH as diesel (TPH_d), and TPH as motor oils (TPH_m).

3. INVESTIGATION RESULTS

3.1 ANALYTICAL RESULTS AND QUALITY ASSURANCE

No analytes were detected at a concentration greater than the laboratory detection limit. Appendix B presents the validated laboratory analytical data and Appendix C presents the land surveying data.

Some results were qualified as estimated or non-detect in the data validation process. These qualifications do not affect the findings or conclusions of this report.

3.2 RESULT EVALUATION AND RISK SCREENING

No analytes were detected in the soil sample at concentrations greater than the laboratory detection limits. This indicates that no release of VOCs or other hydrocarbons exist at the sample location.

4. CONCLUSIONS AND RECOMMENDATIONS

The primary objective of investigations conducted at PRL 118 was to assess whether hazardous substances or pollutants were released to the environment. A review of available records, VSIs, and soil sampling indicate that no release of hazardous substances or pollutants has occurred at PRL 118. This conclusion is supported by the observation that analytes, including VOCs, TPH_g, TPH_d, and TPH_m, were not detected above laboratory reporting limits in the soil sample. Therefore, no further investigation is recommended for PRL 118.

5. REFERENCES

Earth Tech, Inc (Earth Tech). 2003. *Final Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. San Diego, CA: NFECSW SDIEGO. September.

Environmental Protection Agency, United States (EPA). 2004. *SW-846 On-Line, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*.
<http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm>. Office of Solid Waste.

Tables

Table 1: Sampling and Analyses Summary – PRL 118

Sample Location	EPA ID	Sample Depth (bgs)	Sampling Technique	Analyte Group and Analytical Method ^a	
				VOC 8260B	TPH 8015B
HA1	LJ333	2.5 feet	Hand Auger	X	X

Notes:

^a Analysis was in general accordance with the listed methods provided in EPA Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

X = analysis was performed for the specified analyte

Summary Report For PRL 118
Former MCAS El Toro

February 2005

Table 2. Analytical Results Summary - PRL 118

Analyte	Residential Soil PRG ^a	Sample Location	PRL 118- HA1
		Sample Depth	2.5 feet bgs
		Sample Name	LJ333
Total Petroleum Hydrocarbons (mg/kg)			
TPH as Gasoline	---		9.70 J

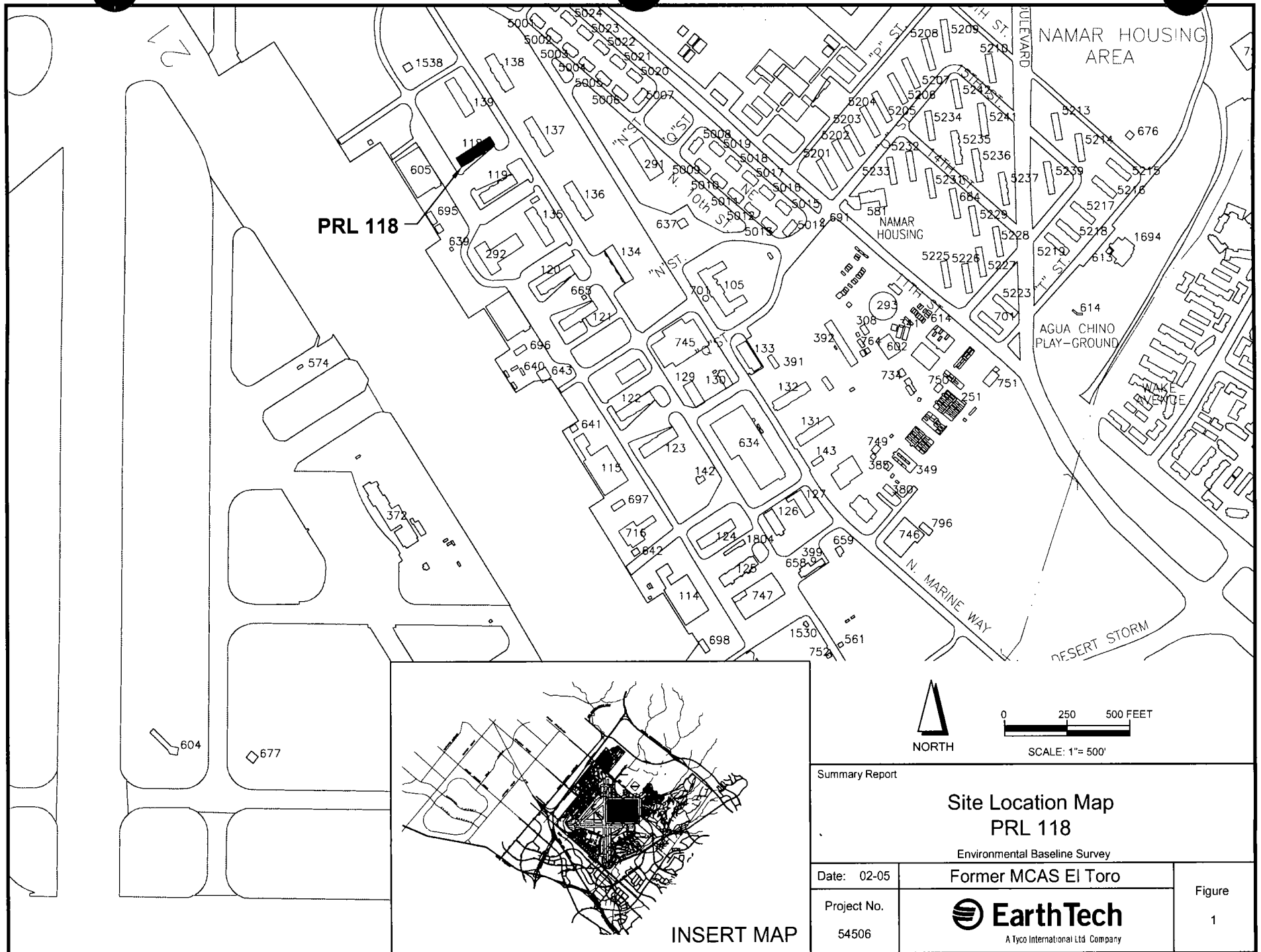
Notes

J = Indicates an estimated value

-- = Value does not exist

^a Analytical results were compared to EPA Region 9 PRGs (2004).

Figures



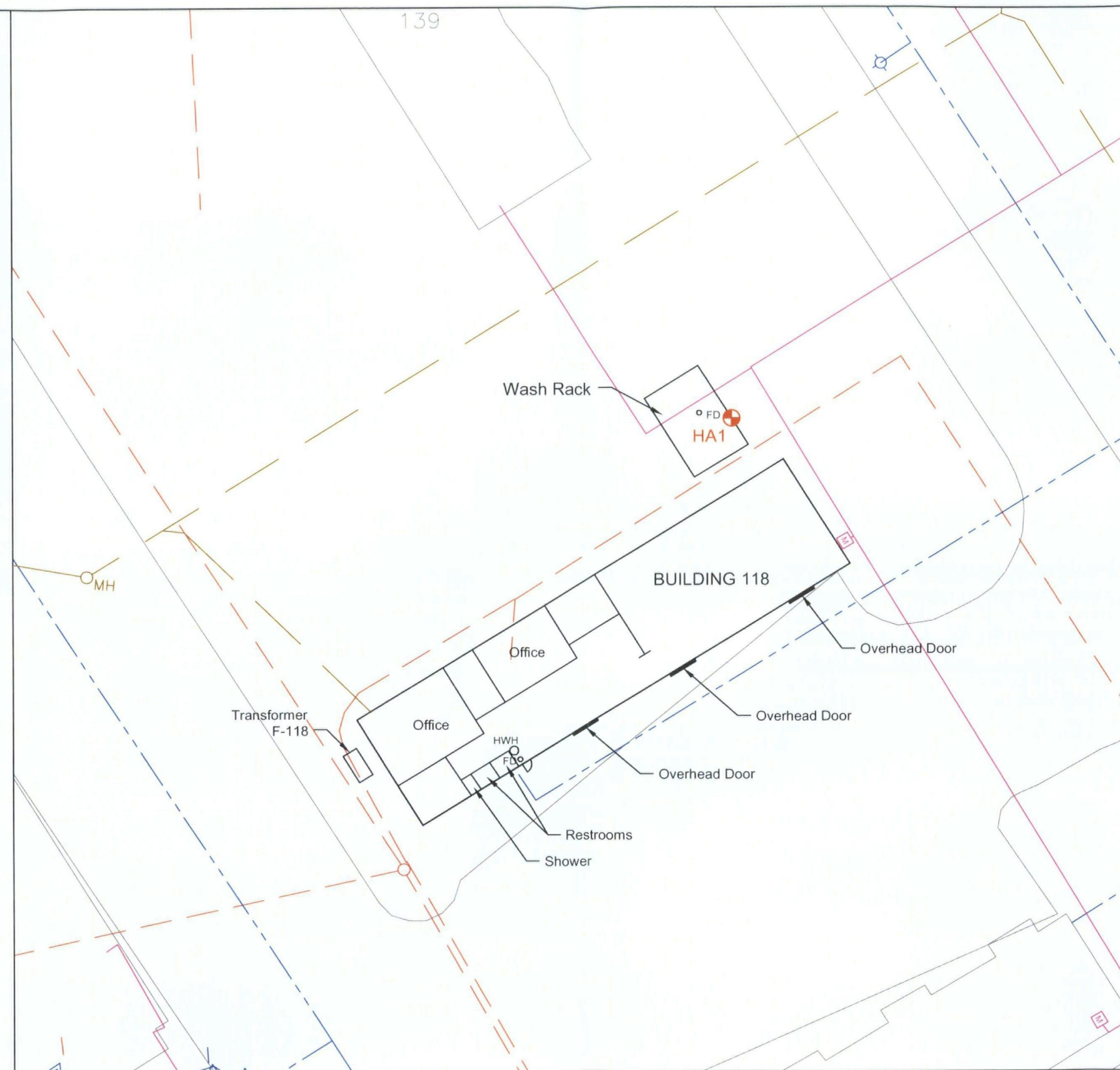
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Building 118
(Facing Northeast)

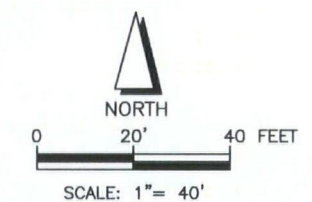


Exterior View of Building 118 with
Associated Washrack
(Facing South)



LEGEND:

- Sanitary Sewer
- Water Line
- Natural Gas Line
- Electrical Line
- HA1 2004 Soil Sample Location
- MH Manhole
- FH Fire Hydrant
- M Meter
- FD Floor Drain
- HWH Hot Water Heater



Note: Features and Interior Layout are Approximate and
May Not be to Scale

Summary Report

Site Plan
PRL 118

Environmental Baseline Survey

Date: 02-05

Former MCAS El Toro

Project No.

54506

EarthTech
A Tyco International Ltd. Company

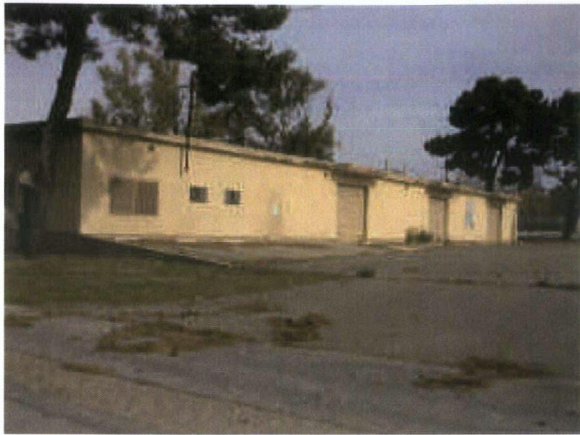
Figure

2

February 2005

Summary Report for PRL 118
Former MCAS El Toro

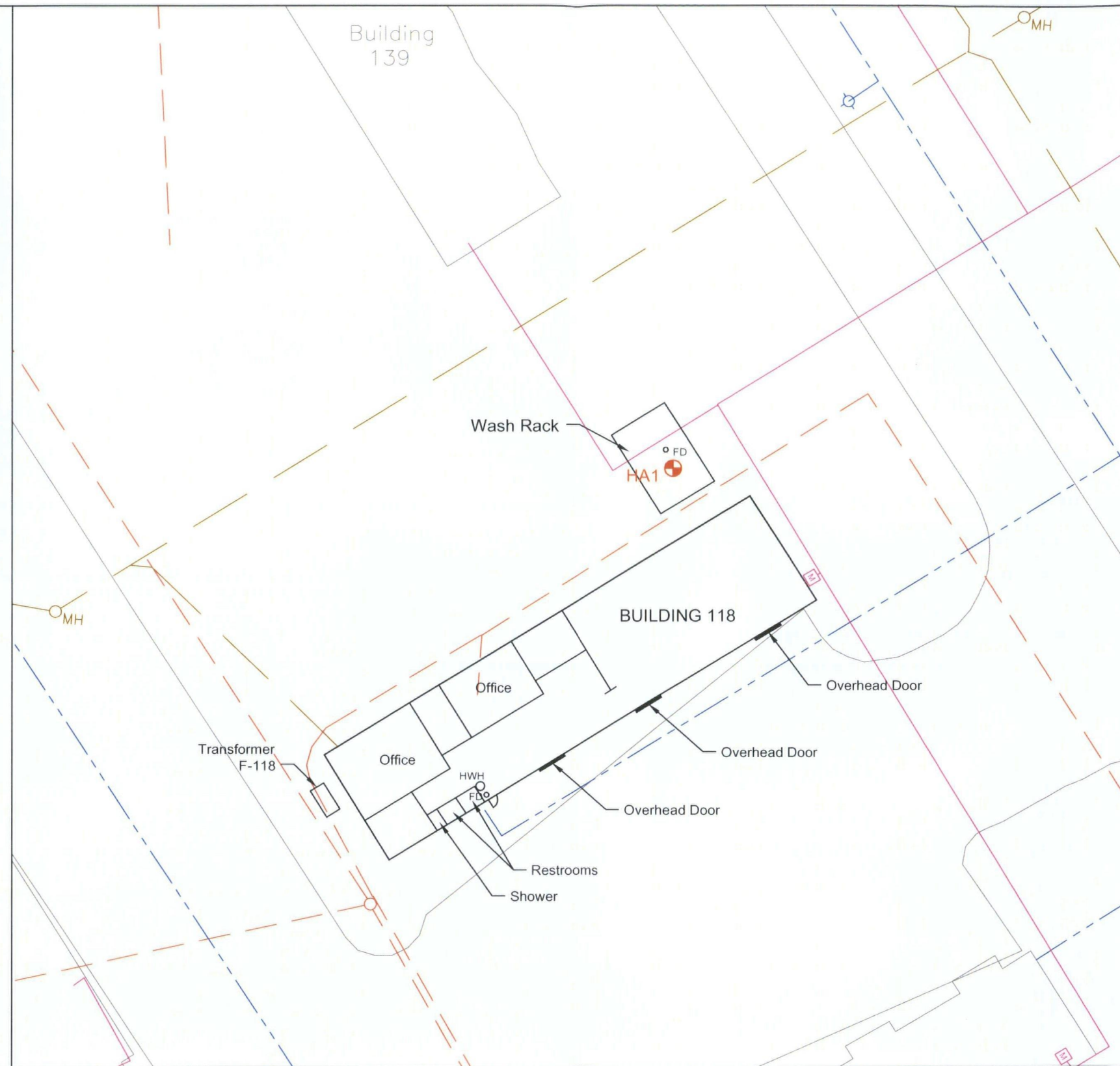
Appendix A
Sampling Design Specification Sheet – PRL 118



Building 118
(Facing Norhteast)



Exterior View of Building 118 with
Associated Washrack
(Facing South)



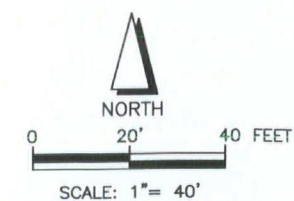
LEGEND:

Sanitary Sewer
Water Line
Natural Gas Line
Electrical Line
Existing Infrastructure

HA1 Proposed Soil Sample Location
MH Manhole
Fire Hydrant
Meter

FD Floor Drain
HWH Hot Water Heater

Note: Locations of Features and Interior
Layout are Approximate



Background

The building was listed as Storehouse in the 1948, 1949, 1950, 1954, and 1958 station lists and as Storehouse, Marine Corps in the 1973 list. The facility description was Maintenance Hangar 01 Space in the 1997 list. The last known descriptions of this building were Maintenance Hangar 02 Space and Maintenance Hangar 01 Space.

One location of concern was associated with this site. PCB T16 was a transformer that was replaced. The 1994 field survey to evaluate PCB T16 and VSI conducted for the 2002 EBS indicated no evidence of release.

Issues/Concerns

1. A wash rack was identified near the north end of the building during 2002 VSI conducted in support of this EBS. This wash rack has not been evaluated for potential releases of wastes. The outfall of the wash area is unknown, and cracks in the concrete of the wash rack were noted.

2. The floor drain adjacent to the hot water heater appears to have been used solely for overflow drainage. Based on this and on the historical use of the building there is no concern of a release to the environment via the floor drain.

Investigation Design

1. Collection of one soil sample is proposed at location HA1 near the floor drain the wash rack area. The sample will be collected 1 foot below the sewer invert by hand auger, and analyzed for VOCs, TPHe, and TPHv.

Preliminary Assessment

Final

**Proposed Sampling Locations
PRL 118**

Environmental Baseline Survey

Date: 01-05	Former MCAS EI Toro	
Project No. 54506	Earth Tech A Tyco International Ltd. Company	

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Summary Report for PRL 118
Former MCAS El Toro

Appendix B
Validated Laboratory Analytical Data Report

Sample ID: LJ333			
Location ID: PRL118-HA01			
Sample Type: SS			
Sample Depth (ft bgs): 2.5			
Sample Date: 15-Oct-04			
Parameter	Unit	Analytical Method ¹	
Volatile Organic Compounds			
1,1,1,2-Tetrachloroethane	µg/kg	8260B	4.9 U
1,1,1-Trichloroethane	µg/kg	8260B	4.9 U
1,1,2,2-Tetrachloroethane	µg/kg	8260B	4.9 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/kg	8260B	4.9 U
1,1,2-Trichloroethane	µg/kg	8260B	4.9 U
1,1-Dichloroethane	µg/kg	8260B	4.9 U
1,1-Dichloroethene	µg/kg	8260B	4.9 U
1,2-Dichloroethane	µg/kg	8260B	4.9 U
1,2-Dichloropropane	µg/kg	8260B	4.9 U
1,2-Dichloropropane	µg/kg	8260B	4.9 U
1,2-Dichlorotetrafluoroethane	µg/kg	8260B	4.9 U
2-Butanone	µg/kg	8260B	99 U
2-Hexanone	µg/kg	8260B	49 U
4-Methyl-2-Pentanone	µg/kg	8260B	49 U
Acetone	µg/kg	8260B	99 U
Benzene	µg/kg	8260B	4.9 U
Bromodichloromethane	µg/kg	8260B	4.9 U
Bromoform	µg/kg	8260B	4.9 U
Bromomethane	µg/kg	8260B	4.9 U
Carbon Disulfide	µg/kg	8260B	4.9 U
Carbon Tetrachloride	µg/kg	8260B	4.9 U
Chlorobenzene	µg/kg	8260B	4.9 U
Chlorodibromomethane	µg/kg	8260B	4.9 U
Chloroethane	µg/kg	8260B	4.9 U
Chloroform	µg/kg	8260B	4.9 U
Chloromethane	µg/kg	8260B	4.9 U
cis-1,2-Dichloroethene	µg/kg	8260B	4.9 U
cis-1,3-Dichloropropene	µg/kg	8260B	4.9 U
Dichlorodifluoromethane (F12)	µg/kg	8260B	4.9 U
Diisopropyl Ether	µg/kg	8260B	4.9 U
Ethylbenzene	µg/kg	8260B	4.9 U
Ethyl-tert-butyl ether (ETBE)	µg/kg	8260B	4.9 U
Methyl tert-butyl ether	µg/kg	8260B	4.9 U
Methylene Chloride	µg/kg	8260B	4.9 U
Styrene	µg/kg	8260B	4.9 U
tert-Amyl methyl ether (TAME)	µg/kg	8260B	4.9 U
tertiary-Butyl alcohol (TBA)	µg/kg	8260B	20 U
Tetrachloroethene	µg/kg	8260B	4.9 U
Toluene	µg/kg	8260B	4.9 U
Total xylenes	µg/kg	8260B	15 U
trans-1,2-Dichloroethene	µg/kg	8260B	4.9 U
trans-1,3-Dichloropropene	µg/kg	8260B	4.9 U
Trichloroethene	µg/kg	8260B	4.9 U
Trichlorofluoromethane	µg/kg	8260B	4.9 U
Vinyl chloride	µg/kg	8260B	4.9 U
Others			
Moisture	%	ASTM D 2216	3.6
PHC as Diesel Fuel	mg/kg	8015B DRO	10 U
TPH as Gasoline	mg/kg	8015B GRO	9.7 U
TPH as Motor Oil	mg/kg	8015B DRO	10 U

Notes:

¹ = Environmental Protection Agency Method unless otherwise noted.

U = Indicates the compound or analyte was analyzed for but was not detected at or above the stated limit.

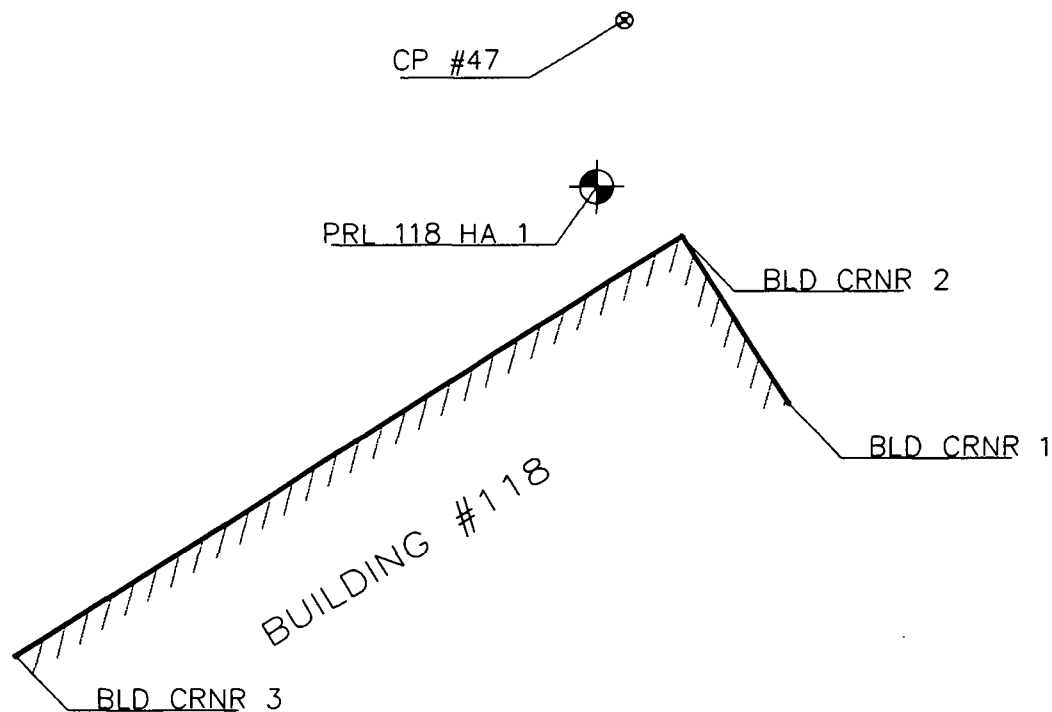
SS = Soil Sample

ASTM = American Society of Testing and Materials

February 2005

Summary Report for PRL 118
Former MCAS El Toro

Appendix C Land Surveying Data



PRL AND NOTABLE FEATURES LOCATIONS			
STATION	NORTHING	EASTING	ELEVATION
BLD CRNR 1	2194352.18	6113714.49	
BLD CRNR 2	2194386.88	6113692.45	
BLD CRNR 3	2194299.98	6113555.25	
CP #47	2194431.51	6113680.56	394.19
CP #48	2194283.46	6113754.67	394.70
PRL 118 HA 1	2194397.13	6113674.96	393.74



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POTENTIAL RELEASE LOCATION SKETCH

SCALE: 1" = 40' DATE: 02-16-05

BY: JCL JOB NO.: 04-1058-2227.000-535

**Attachment 5
Summary Report
PRL 374**



Summary Report for PRL 374, Environmental Baseline Survey

**Former Marine Corps Air Station,
El Toro, California**

February 2005

Prepared for:

**Base Realignment and Closure
Program Management Office West
1230 Columbia Street, Suite 1100
San Diego, CA 92101**

Prepared by:

**Earth Tech, Inc.
841 Bishop Street, Suite 500
Honolulu, HI 96813-3920**

Prepared under:

**Comprehensive Long-Term Environmental Action Navy
Contract Number N62742-94-D-0048, CTO 0104**

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ACRONYMS AND ABBREVIATIONS

AST	aboveground storage tank
bgs	below ground surface
BNI	Bechtel National Inc.
EPA	Environmental Protection Agency
EPC	exposure point concentration
EBS	environmental baseline survey
MCAS	Marine Corps Air Station
mg/kg	milligrams per kilogram
PCB	polychlorinated biphenyl
PRG	preliminary remediation goal
PRL	potential release location
RCRA	Resource Conservation and Recovery Act
RWQCB	Regional Water Quality Control Board
TPH	total petroleum hydrocarbons
UST	underground storage tank
VSI	visual site inspection

1. BACKGROUND

Potential Release Location (PRL) 374 is associated with Building 374 and is located in the southwest quadrant of former Marine Corps Air Station (MCAS) El Toro, California (see Figure 1). The building was listed as "Utility Building" in the 1954 and 1958 building lists. In 1973, the building was listed as "Compressed Air Plant, Heating Plant, and Fire Protection Pumping Station." In the 1997 list, the building was listed as "Conversion Station and Heat Plant Building," which is the last known description. Figure 2 shows the plan of Building 374 and the surrounding area.

Eight locations of concern were associated with this site: aboveground storage tanks (ASTs) 374A, 374B, 374C, 374D, and 374E; polychlorinated biphenyl (PCB) transformer T59; and underground storage tanks (USTs) 374A and 374B. ASTs 374A, 374B, 374C, 374D, and 374E were 100-gallon diesel storage tanks. These tanks were removed, and all the sites were closed by the Regional Water Quality Control Board (RWQCB) as stated in a letter dated 18 October 2000. UST 374A, a 42,000-gallon diesel storage tank, was investigated as solid waste management unit/area of concern (SWMU/AOC) 263 as part of the Resource Conservation and Recovery Act (RCRA) Facility Assessment and was removed in 1993. The site was closed by Orange County Health Care Agency as stated in a letter dated 9 December 1996. UST 374B, a 10,000-gallon diesel storage tank, was removed in 1993, and the site was closed by the RWQCB as stated in a letter dated 2 October 1997. PCB T59 was a pad-mounted transformer, which was replaced with a non-PCB transformer. The 1994 field survey for PCB-transformer evaluation indicated no evidence of release. No PCB releases were identified through the records search or through the visual site inspection (VSI) conducted in 2002 in support of the 2003 environmental baseline survey (EBS).

1.1 ISSUES AND CONCERNS

The following issues and concerns associated with this PRL were identified through the records search and VSI conducted in 2002 and 2004:

- Stained concrete adjacent to a compressor in the electrical room and in pipe trenches was noted during the 2002 VSI, which was conducted in support of the EBS. Although past activities in the building do not pose a concern of waste releases to the environment, the staining in the electrical room was near a floor drain, which may have resulted in releases to the sanitary sewer and ground. Further evaluation was recommended.
- Stains beneath generators in the electrical room were observed during the VSI. However, these stains were small, located on concrete that was in good condition, and away from floor drains. There is no associated concern of a release to the ground or sewer.
- A sump located north of the boilers was used to collect blow-down wastewater from the boilers and mechanical equipment. This wastewater may have contained oils and anti-corrosion chemicals used in the equipment. Further assessment was recommended.

The AST and UST sites were investigated as part of the closure procedures. The sampling locations and analyte lists are presented in Figure 2; however, they do not coincide with the current issues and concerns.

A sampling program was proposed to further investigate the issues identified and assess whether hazardous substances or pollutants have released to the environment. Chemicals of concern associated with the stain near the compressor and floor drain are petroleum hydrocarbons found in lubricating oil used in machinery. Chemicals of concern associated with the sump include petroleum

hydrocarbons and chromium associated with machinery oil in blow-down wastewater and anti-corrosion chemicals, respectively. A summary of soil sampling activities is presented in Section 2, and the results are presented in Section 3.

2. SAMPLING AND ANALYSIS SUMMARY

Sampling was conducted for evaluation of PRL 374 in October 2004. The sample locations are shown in Figure 2, and a summary of sampling and analyses is provided in Table 1. The specification sheet, which includes the rationale for the sampling design, is presented in Appendix A of this summary report.

Soil samples were collected at two locations, HA1 and HA2, at PRL 374. The sample at HA1 was collected near the stained area in the Electrical Room adjacent to the floor drain. The sample was collected at 1.5 feet below ground surface (bgs) using a hand auger, and analyzed for total petroleum hydrocarbons (TPH). The results for TPH were reported as TPH gasoline (TPH_g), TPH diesel (TPH_d), and TPH motor oils (TPH_m). The sample at HA2 was collected near the sanitary sewer line north of Building 374. The sample was collected at 2.5 feet below the sanitary sewer invert using a hand auger and analyzed for TPH and chromium. This sample was also used to assess whether any releases to the environment occurred because of cracks in the sanitary sewer in the vicinity of the building.

3. INVESTIGATION RESULTS

3.1 ANALYTICAL RESULTS AND QUALITY ASSURANCE

The results for detected analytes for the samples collected at PRL 374, along with the United States Environmental Protection Agency (EPA) Region 9 or California-modified residential preliminary remediation goals (PRGs) (EPA Region 9 2004), are presented in Table 2. Appendix B presents the validated laboratory analytical data and Appendix C presents the land surveying data.

Some results were qualified as estimated or non-detect in the data validation process. These qualifications do not affect the findings or conclusions of this report.

3.2 RESULT EVALUATION AND RISK SCREENING

The concentrations of TPH in the soil sample do not indicate that there has been a significant release of hydrocarbons to the soil via the floor drain. The main contributor to the TPH detection at HA1 is from the group of TPHs associated with motor oil or lubricating oil, which would have been used in the compressor and pumps, in quantities less than 1 gallon. The TPH concentration detected at HA1 is assessed to be representative of the maximum concentration in soil as it is adjacent to the source of release (i.e., the floor drain). No storage tank was observed, or was known to have been located in the past, in the boiler room where the floor drain is located. The other sources of petroleum hydrocarbons in the vicinity were aboveground and underground tanks used to store diesel fuel. These tanks have since been removed and the sites closed by regulatory agencies with no evidence of a release. Furthermore, the concentrations of TPH_d in the soil samples from HA1 and HA2 are 2 and 4 µg/kg, respectively, and are not indicative of a release from the storage tanks.

The detected chromium concentration was less than MCAS El Toro background value (BNI 1996) and PRG.

Risk screening was performed to evaluate risks associated with potential exposures to chemicals of potential concern (detected analytes) in the soil at PRL 374. The methodology for risk screening is presented in Section 3.2 of the Summary Report, and results are presented in Table 3.

The cumulative maximum carcinogenic risk due to potential exposure to maximum detected concentrations of chromium is $4.0\text{E-}08$, which is below the EPA point of departure risk level of $1.0\text{E-}06$. No noncarcinogenic PRG exists for total chromium and no PRGs exist for TPH or its subcategories (i.e., TPH_g , TPH_d , and TPH_m). Therefore, no risk screening was conducted for these analytes.

4. CONCLUSIONS AND RECOMMENDATIONS

The primary objective of investigations conducted at PRL 374 was to assess whether hazardous substances or pollutants were released to the environment. A review of available records, VSIs, and soil sampling indicate that no significant release of hazardous substances or pollutants has occurred at PRL 374. This conclusion is supported by the observation that detected concentrations of all chemicals of concern were less than their respective residential PRGs or are not indicative of a release. The TPHs detected in the soil samples likely result from lubricants used in the machinery in the boiler room in quantities of less than 1 gallon and cannot be attributed to larger sources such as the former diesel storage tanks. The cancer risk at PRL 374 is less than the EPA point of departure value of $1.0\text{E-}06$. Therefore, no further investigation is recommended for PRL 374.

5. REFERENCES

- Bechtel National, Inc. (BNI). 1996. *Final Technical Memorandum, Background and Reference Levels, Remedial Investigations, Marine Corps Air Station El Toro, California*. San Diego, California: NAVFAC EFD SOUTHWEST.
- . 1996. *Final Site Assessment Report, Former Underground Storage Tank Site 374B, Marine Corps Air Station El Toro, CA*. March.
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- OHM Remediation Services (OHM). 2000. *Site Plan AST 374 A through E, Marine Corps Air Station El Toro, California*. August.

February 2005

Summary Report for PRL 374
Former MCAS El Toro

Tables

Table 1: Sampling and Analysis Summary – PRL 374

Sample Location	EPA ID	Sample Depth (bgs)	Sampling Technique	Analyte Group and Analytical Method ^a	
				TPH ^b 8015B	Chromium 6010B
HA1	LJ324	1.5 feet	Hand Auger	X	--
HA2	LJ323	2.5 feet	Hand Auger	X	X

Notes:

^a Analysis was in general accordance with the listed methods provided in EPA Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

^b Analytical results for TPH were reported as total petroleum hydrocarbons as gasoline (TPH_g), total petroleum hydrocarbons as diesel (TPH_d), and total petroleum hydrocarbons as motor oils (TPH_m).

X = analysis was performed for the specified analyte

-- = analysis was not performed for the specified analyte

February 2005

Summary Report for PRL 374
Former MCAS El Toro

Table 2. Analytical Results Summary - PRL 374

Analyte	MCAS El Toro Background Concentrations (95th Quantile) ^a	Residential Soil PRG ^b	Sample Location	PRL 374- HA1	PRL 374-HA2
			Sample Depth	2 feet bgs	3 feet bgs
			Sample Name	LJ324	LJ323
Total Petroleum Hydrocarbons (mg/kg)					
TPH as Diesel	—	—		4	2
TPH as Motor Oil	—	—		35	11
Metals (mg/kg)					
Chromium	26.9	2.1E+02		-	8.5

Notes

-- = Value does not exist

^a = Source: BNI, 1996

^b = Analytical results were compared to EPA Region 9 PRGs (2004).

February 2005

Summary Report for PRL 374
Former MCAS El Toro

Table 3: Risk Screening Results - PRL 374

Chemical of Potential Concern	MCAS El Toro Background Concentrations (95th Quantile) ^a	Maximum EPC ^b (mg/kg)	Carcinogenic PRG ^c (mg/kg)	Noncarcinogenic PRG ^c (mg/kg)	Risk Corresponding to Maximum EPC			
					Carcinogenic		Noncarcinogenic	
					Excess Cancer Risk ^d	Percent Contribution to Cancer Risk ^e	HI ^f	Percent Contribution to Noncancer Risk ^e
TPH as Gasoline	--	9.8	--	--	--	--	--	--
TPH as Diesel	--	4	--	--	--	--	--	--
TPH as Motor Oil	--	35	--	--	--	--	--	--
Chromium	26.9	8.5	2.1E+02	--	4.0E-08	100%	--	--
Cumulative Maximum Risk					4.0E-08		0.0E+00	

Notes:

^a = Source: BNI, 1996

^b EPC = exposure point concentration

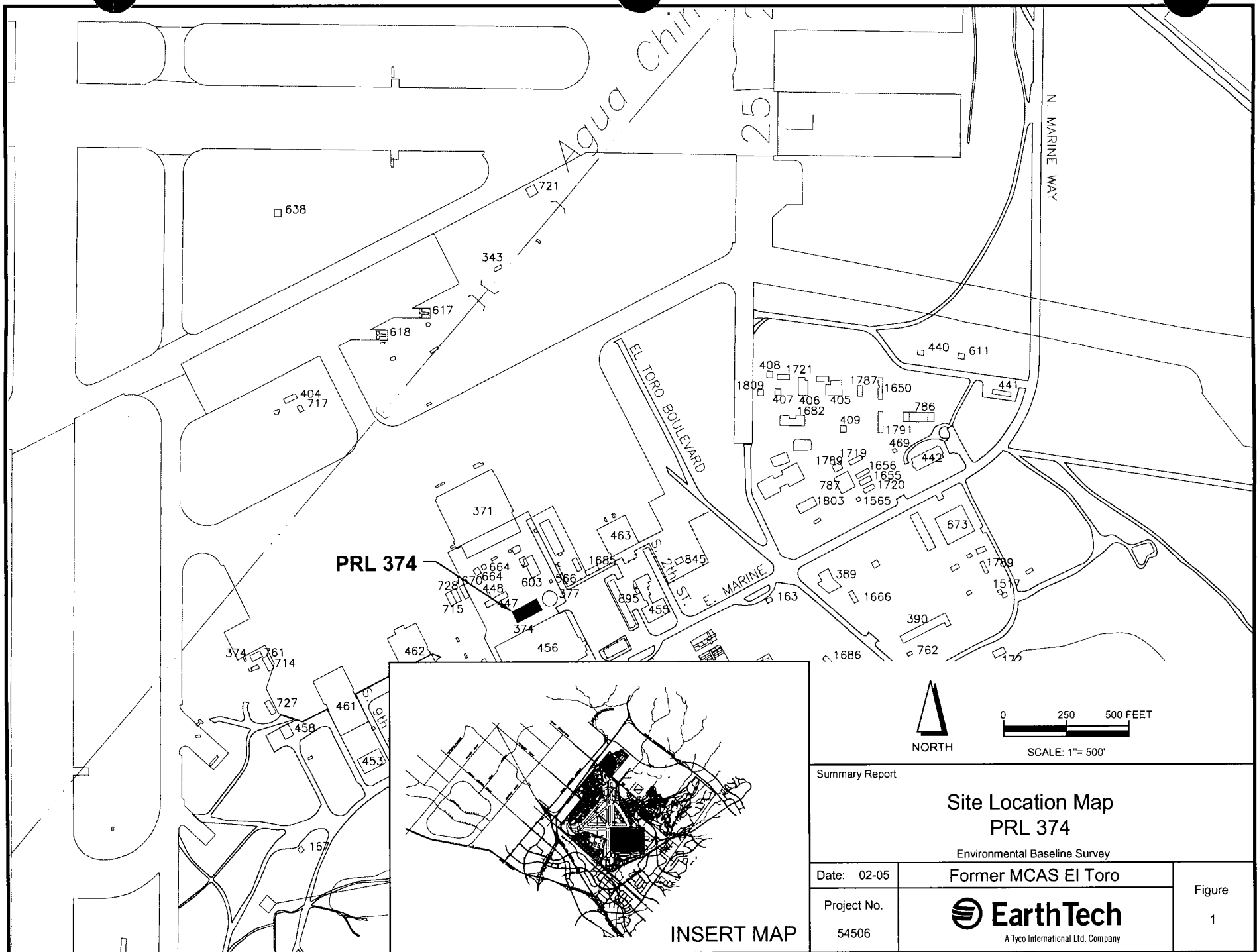
^c EPA Region 9 PRGs (2004).

^d Excess cancer risk = 1E-06 x (Maximum EPC/Carcinogenic PRG)

^e With respect to cumulative excess cancer risk or hazard index (including metals with background)

^f HI = Maximum EPC / Noncarcinogenic PRG

Figures

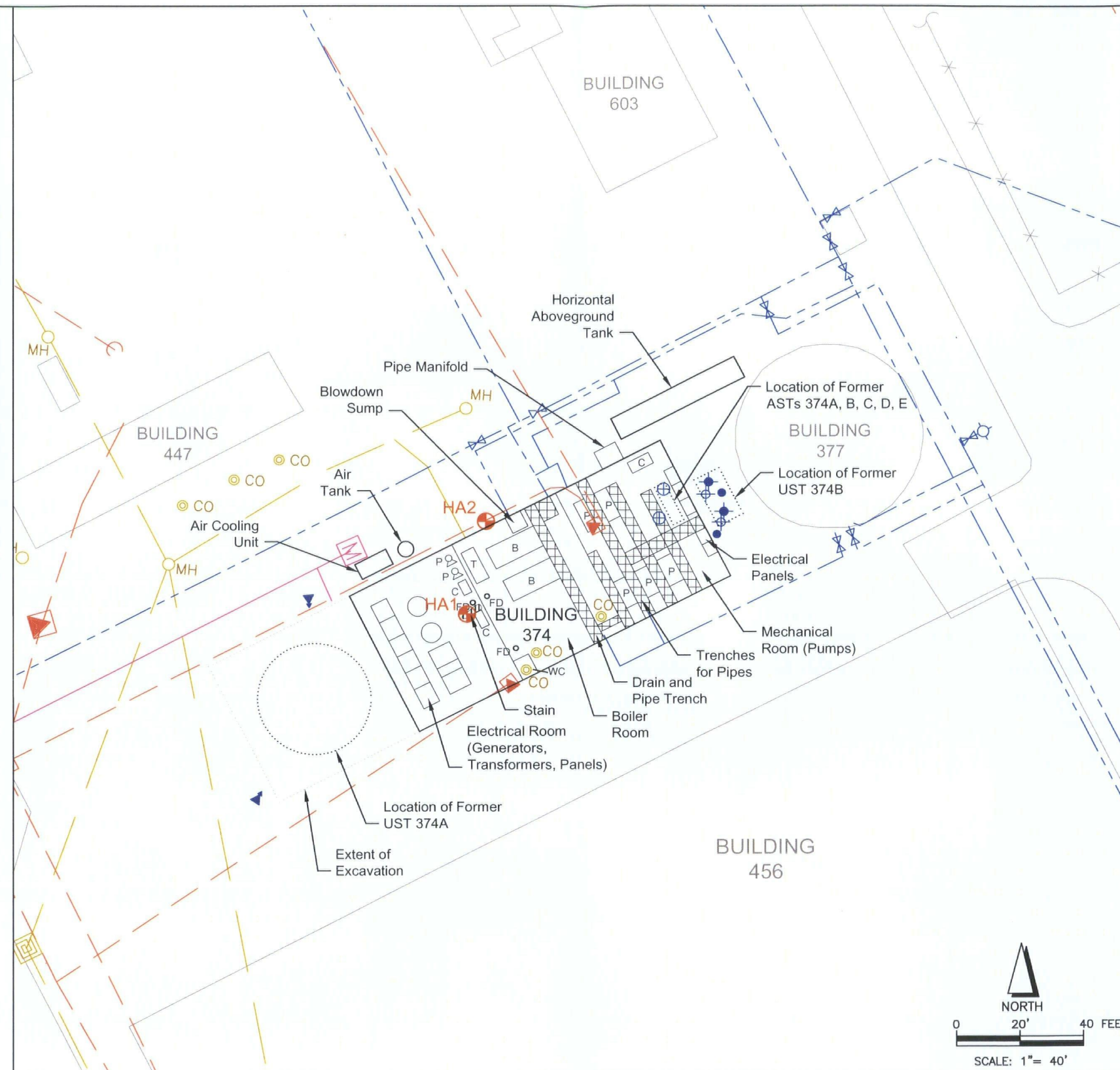




West Side of Building 374
(Facing East)



Stained Concrete Beneath
Compressor and Near Floor Drain
(Facing Southeast)



Summary Report		
Site Plan PRL 374		
Environmental Baseline Survey		
Date: 02-05	Former MCAS El Toro	Figure 2
Project No. 54506	EarthTech A Tyco International Ltd. Company	

February 2005

Summary Report for PRL 374
Former MCAS El Toro

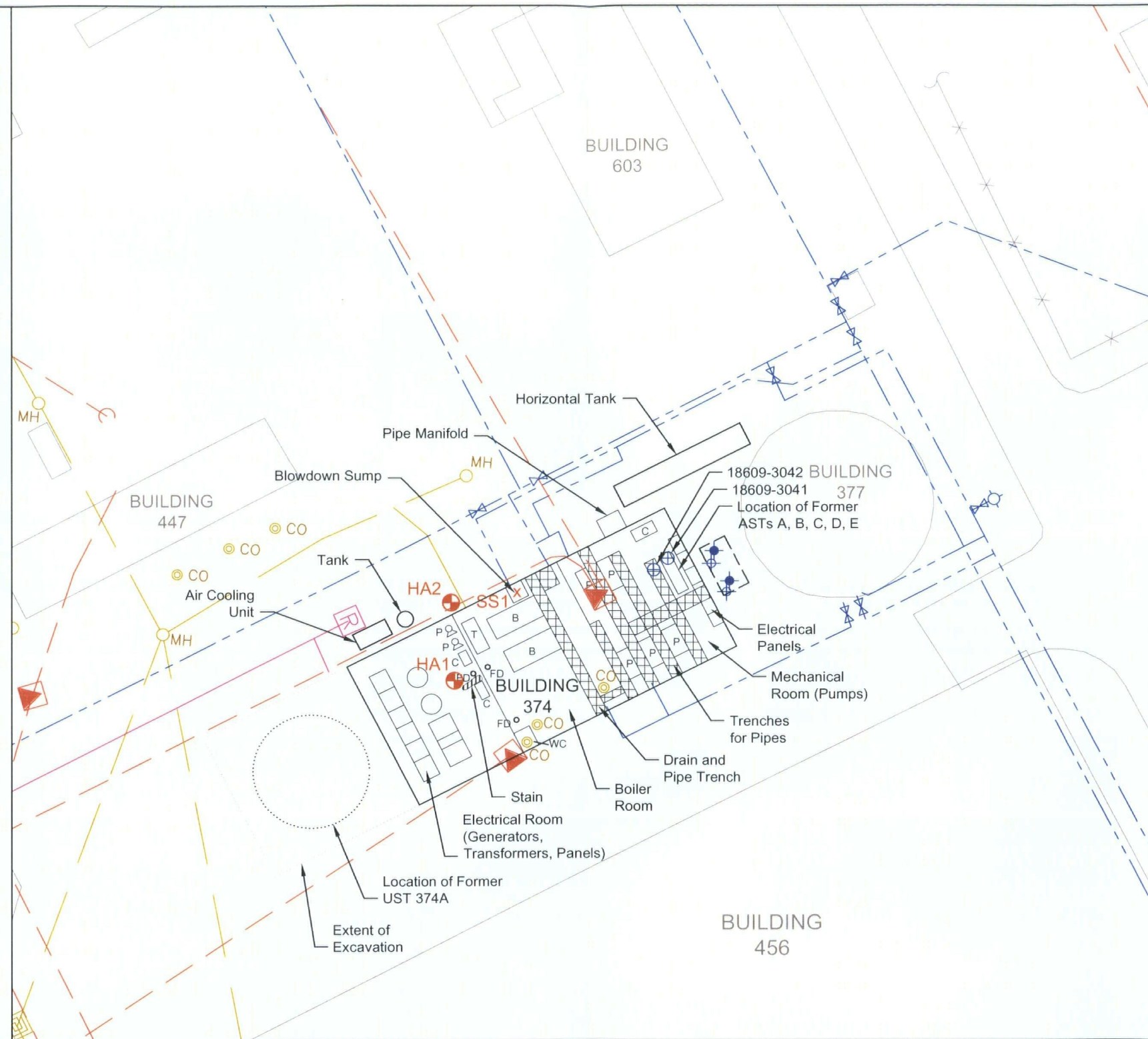
Appendix A
Sampling Design Specification Sheet – PRL 374



West Side of Building 374
(Facing East)



Stained Concrete Beneath
Compressor Near Floor Drain
(Facing Southeast)



LEGEND:

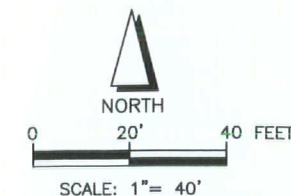
- Sanitary Sewer
- Water Line
- Natural Gas Line
- Electrical Line
- Existing Infrastructure

- HA2 Proposed Soil Sample Location
- CO Clean Out
- MH Manhole
- Transformer
- Fire Hydrant
- Water Valve
- SS1 x Sump Sample

- Approximate 1997 Soil Sample Locations
(The parameters in parentheses indicate chemicals analyzed)
- Approximate 1997 Soil Sample Locations
(The parameters in parentheses indicate chemicals analyzed)
- Approximate 2000 Soil Sample Locations
(Surface Samples; Analytes: TPH, MTBE, BTEX)

- C Compressor
- WC Restroom
- P Pump
- B Boiler
- T Tank
- FD Floor Drain

Note: Locations of Features and Interior Layout are Approximate



Background

Building 374 was listed as Utility Building in 1954 and 1958. In 1973 the building was listed as Compressed Air Plant, Heating Plant, and Fire Protection Pumping Station. In the 1997 list, the building use was listed as Conversion Station. The last known description of the building is Conversion Station and Heat Plant Building.

Eight locations of concern (LOCs) were associated with Building 374: AST 374A, AST 374B, AST 374C, AST 374D, AST 374E, PCB T59, UST 374A, and UST 374B. ASTs 374A, 374B, 374C, 374D, and 374E were 100-gallon diesel storage tanks. These tanks were removed and all the sites were closed by the RWQCB in a letter dated 18 October 2000. UST 374A was a 42,000-gallon diesel underground storage tank. This tank was investigated as SWMU/AOC 263 as a part of the RFA and was removed in 1993. The site was closed by OCHCA in a letter dated 9 December 1996. UST 374B was a 10,000-gallon diesel storage tank. The tank was removed in 1993, and the site was closed by the RWQCB in a letter dated 2 October 1997. PCB T59 was a pad-mounted transformer that was replaced with a non-PCB transformer. The 1994 field survey for PCB-transformer evaluation indicated no evidence of release. No PCB releases were identified through the records searched or through the VSI conducted in 2002 for the EBS.

Previous sampling was conducted to investigate LOC UST374B. However, sample locations and/or analytes do not coincide with the proposed investigation.

Issues/Concerns

1. Stained concrete adjacent to a compressor in the electrical room and in drainage pits was noted during the 2002 VSI conducted in support of the EBS. Although past activities in the building do not pose a concern of waste releases to the environment, the staining in the electrical room was near a floor drain, which may have resulted in releases to the sanitary sewer and ground. Further evaluation is recommended.
2. Stains beneath generators in electrical room were observed during the VSI. However, these stains were small, located on concrete that was in good condition and away from floor drains. There is no associated concern of a release to the ground or sewer.
3. A sump located north of the boilers was used to collect blowdown wastewater from the boilers and mechanical equipment. Although the blowdown may have contained corrosion inhibiting chemicals in the past, the length of time since their last use precludes residuals from being found inside the sump presently. No further investigation of the sump is required.

Investigation Design

1. One soil sample is proposed to be collected at location HA1 near the stained area in Electrical Room. The sample will be collected 1 foot below the bottom of the floor drain invert by hand auger and analyzed for TPHe and TPHv.
2. One soil sample is proposed to be collected at location HA2, near the sanitary sewer line north of Building 374. The sample will be collected 1 foot below the sanitary sewer invert using a hand auger, and analyzed for TPHe, TPHv, and chromium. This sample will be used to assess if any releases to the environment occurred due to cracks in the sanitary sewer in the vicinity of the building.

References

1. Kistner, Kurtis and Wright. 1952. General Utilities, Plumbing and Drainage Plan, MCAS EL Toro. May.
2. Southwest Division, Naval Facilities Engineering Command (NFEC SW SDIEGO). 1993. Marine Corps Air Station El Toro, California, Installation Restoration Program, Final RCRA Facility Assessment Report. July.
3. Bechtel National, Inc. (BNI). 1996. Final Site Assessment Report, Former Underground Storage Tank Site 374B, Marine Corps Air Station El Toro, CA. March.
4. NFEC SW SDIEGO. 1997. Addendum, Site Assessment Report, Former Underground Storage Tank Site 374B, Marine Corps Air Station El Toro, CA. September.
5. OHM Remediation Services (OHM). 2000. Site Plan AST 374 A through E, Marine Corps Air Station El Toro, California. August.

Preliminary Assessment

Final

**Proposed Sampling Locations
PRL 374**

Environmental Baseline Survey

Date: 01-05	Former MCAS El Toro
Project No. 54506	EarthTech A Tyco International Ltd. Company

February 2005

Summary Report for PRL 374
Former MCAS El Toro

Appendix B
Validated Laboratory Analytical Data Report

Sample ID: Location ID: Sample Type: Sample Depth (ft bgs): Sample Date:			LJ323	LJ324
			PRL374-HA02	PRL374-HA01
			SS	SS
			3.0	2.0
			14-Oct-04	14-Oct-04
Parameter	Units	Analytical Method ¹		
Metals				
Chromium	mg/kg	6010B	8.5	--
Others				
Moisture	%	ASTM D 2216	6.8	7.3
PHC as Diesel Fuel	mg/kg	8015B DRO	2 J	4 J
TPH as Gasoline	mg/kg	8015B GRO	9.8 U	9.1 U
TPH as Motor Oil	mg/kg	8015B DRO	11	35

Notes:

¹ = Environmental Protection Agency Method unless otherwise noted.

U = Indicates the compound or analyte was analyzed for but was not detected at or above the stated limit.

J = Indicates an estimated value

-- = Not Analyzed

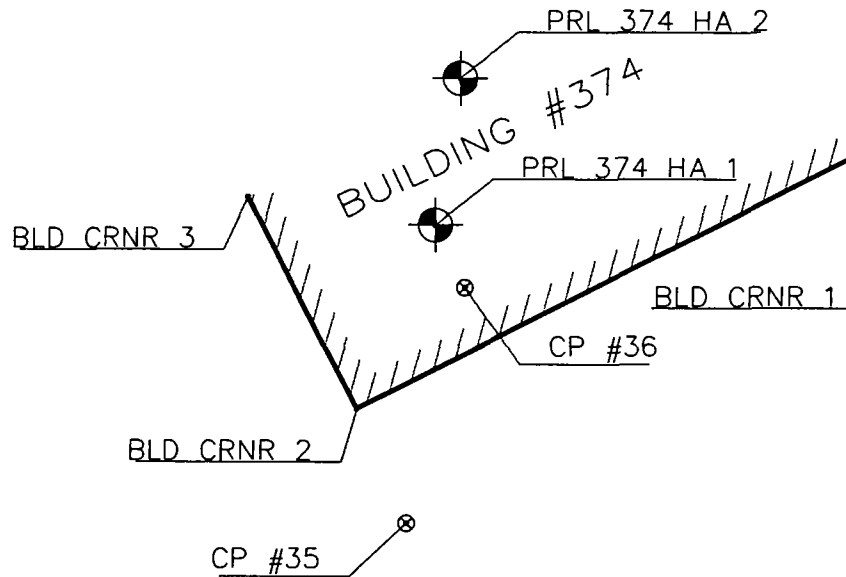
SS = Soil Sample

ASTM = American Society of Testing and Materials

February 2005

Summary Report for PRL 374
Former MCAS El Toro

Appendix C Land Surveying Data



PRL AND NOTABLE FEATURES LOCATIONS			
STATION	NORTHING	EASTING	ELEVATION
BLD CRNR 1	2188812.00	6114045.99	
BLD CRNR 2	2188760.19	6113945.07	
BLD CRNR 3	2188804.08	6113922.55	
CP #35	2188736.47	6113955.11	349.99
CP #36	2188785.31	6113967.00	350.18
CP #49	2188738.27	6113787.06	348.89
PRL 374 HA 1	2188798.26	6113960.92	350.06
PRL 374 HA 2	2188828.63	6113966.02	349.86



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POTENTIAL RELEASE LOCATION SKETCH

SCALE: 1" = 40' DATE: 02-16-05

BY: JCL JOB NO.: 04-1058-2227.000-535

Attachment 6
Summary Report
PRL 442



Summary Report for PRL 442, Environmental Baseline Survey

**Former Marine Corps Air Station,
El Toro, California**

February 2005

Prepared for:

**Base Realignment and Closure
Program Management Office West
1230 Columbia Street, Suite 1100
San Diego, CA 92101**

Prepared by:

**Earth Tech, Inc.
841 Bishop Street, Suite 500
Honolulu, HI 96813-3920**

Prepared under:

**Comprehensive Long-Term Environmental Action Navy
Contract Number N62742-94-D-0048, CTO 0104**

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APPENDICES

A Sampling Design Specification Sheet – PRL 442
B Validated Laboratory Analytical Data Reports
C Land Surveying Data

ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
BNI	Bechtel National Inc.
EPA	Environmental Protection Agency
MCAS	Marine Corps Air Station
mg/kg	milligrams per kilogram
PRG	preliminary remediation goal
PRL	potential release location
TPH	total petroleum hydrocarbons
VOC	volatile organic compound

1. BACKGROUND

Potential Release Location (PRL) 442 is associated with Building 442, located in the northeast quadrant of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). The building was listed as "Missile Maintenance Equipment Shop (Ordnance)" in the 1973 station list. The facility description was "Aviation Armament/Station" in the 1997 list, which is its last known description. Figure 2 shows the plan of Building 442 and the surrounding area.

Two locations of concern were associated with this site. Underground storage tank (UST) 442, a 110-gallon fuel oil tank, was removed, and the site was closed by the Orange County Health Care Agency as stated in a letter dated 9 December 1996 (Earth Tech 2003).

Solid waste management unit (SWMU) 185 was a drum storage area situated north of Building 673 and south of Building 442. No further action was recommended for this area as stated in a letter dated 14 June 2002.

1.1 ISSUES AND CONCERNS

The following issues and concerns associated with this PRL were identified through the records search and visual site inspections (VSIs) conducted in 2002 and 2004:

- The drainage pits inside the building discharge directly to the ground outside. Based on the industrial use of the facility, a potential exists for release of hazardous materials or pollutants to the environment, namely oils, lubricants, solvents, and residuals from explosives and rocket propellant. The drainage pits are situated in an area designated as "Open Work Area." Further evaluation was recommended to assess whether releases to the environment have occurred as a result of past operations at this facility

A sampling program was proposed to further investigate the issues identified and assess whether hazardous substances or pollutants have released to the environment. The chemicals of concern associated with this site are volatile organic compounds (VOCs) (solvents), total petroleum hydrocarbons (TPH) (oils and lubricants), nitroaromatics and nitroamines (explosives residues), and perchlorate (rocket propellant). A summary of soil sampling activities is presented in Section 2, and the results are presented in Section 3.

2. SAMPLING AND ANALYSIS SUMMARY

Sampling was conducted for evaluation of PRL 442 in October 2004. The sample locations are shown in Figure 2, and a summary of sampling and analyses is provided in Table 1. The specification sheet, which includes the rationale for the sampling design, is presented in Appendix A of this summary report.

Soil samples were collected at three locations: HA1, HA2, and HA3. Boreholes HA1 and HA2 were advanced using a hand auger at the outlets of the drainage pits, and soil samples were collected at 0.5 foot below ground surface (bgs). At HA3, a soil sample was collected near the sanitary sewer line south of Building 442 at 2.5 feet bgs. All three samples were analyzed for VOCs, TPH, nitroaromatics and nitroamines, and perchlorate. The results for TPH were reported as TPH as gasoline (TPH_g), TPH as diesel (TPH_d), and TPH as motor oils (TPH_m).

3. INVESTIGATION RESULTS

3.1 ANALYTICAL RESULTS AND QUALITY ASSURANCE

The results for detected analytes for the samples collected at PRL 442, along with the United States Environmental Protection Agency (EPA) Region 9 or California-Modified residential preliminary remediation goals (PRGs), are presented in Table 2 (EPA Region 9 2004). The table also includes the corresponding Federal and State regulatory concentrations for determining the hazardous status of the material. Appendix B presents the validated laboratory analytical data and Appendix C presents the land surveying data.

Some results were qualified as estimated or non-detect in the data validation process. These qualifications do not affect the findings or conclusions of this report.

3.2 RESULT EVALUATION AND RISK SCREENING

The contributions to TPH detections in the soil samples are associated with diesel fuel and motor oil. The detections are assessed to be representative of the maximum concentrations in soil as the samples were collected adjacent to the sources of release (i.e., drainage pit outlets and sewer line) and no other sources are known to exist or to have existed in the vicinity. Therefore, the concentrations of TPH in the soil samples do not indicate that there has been a significant release of hydrocarbons to the soil via the drainage outlets or sewer line.

No PRGs exist for TPH or its subcategories (i.e., TPH_g, TPH_d, and TPH_m), and other analytes with PRG values, including VOCs, were not detected above laboratory reporting limits. Therefore, no risk screening was conducted for PRL 442.

4. CONCLUSIONS AND RECOMMENDATIONS

The primary objective of investigations conducted at PRL 442 was to assess whether hazardous substances or pollutants were released to the environment. The concentrations of TPH in the soil samples do not indicate that there has been a significant release of hydrocarbons to the soil via the drainage pits. Other analytes, including VOCs, explosives residues (nitroaromatics and nitroamines), and perchlorate, were not detected above laboratory reporting limits in any of the soil samples. Based on these results, no further investigation is recommended for PRL 442.

5. REFERENCES

Bechtel National, Inc. (BNI). 1996. *Final Technical Memorandum, Background and Reference Levels, Remedial Investigations, Marine Corps Air Station El Toro, California*. San Diego, California: NAVFAC EFD SOUTHWEST.

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Naval Facilities Engineering Command, Southwest (NFEC SW SDIEGO). 2002. Memorandum: 1980 Photographs of Drum Storage Areas, MCAS, El Toro, California. June.

Tables

Table 1: Sampling and Analyses Summary - PRL 442

Sample Location	EPA ID	Sample Depth (feet bgs)	Sampling Technique	Analyte Group and Analytical Method ^a			
				VOC 8260B	TPH 8015B	Nitroaromatics and Nitroamines 8330	Perchlorate 314.0
HA1	LJ325	0.5	Hand Auger	X	X	X	X
HA2	LJ326	0.5	Hand Auger	X	X	X	X
HA3	LJ327	2.5	Hand Auger	X	X	X	X

Notes:

^a Analysis was in general accordance with the listed methods provided in EPA Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

X = analysis was performed for the specified analyte

February 2005

Summary Report for PRL 442
Former MCAS El Toro

Table 2. Analytical Results Summary - PRL 442

Analyte	MCAS El Toro Background Concentrations (95th Quantile) ^a	Residential Soil PRG ^b	Sample Location	PRL 442- HA1	PRL 442-HA2	PRL 442-HA3
			Sample Depth	0.5 feet bgs	0.5 feet bgs	—
			Sample Name	LJ325	LJ326	LJ327
Total Petroleum Hydrocarbons (mg/kg)						
TPH as Diesel	—	—		100	309	5
TPH as Motor Oil	—	—		74	160	4

Notes

— = Value does not exist

UJ = Indicates the compound or analyte was analyzed for but was not detected. The sample detection limit is an estimated value.

^a = Source: BNI, 1996

^b = Analytical results were compared to EPA Region 9 PRGs (2004).

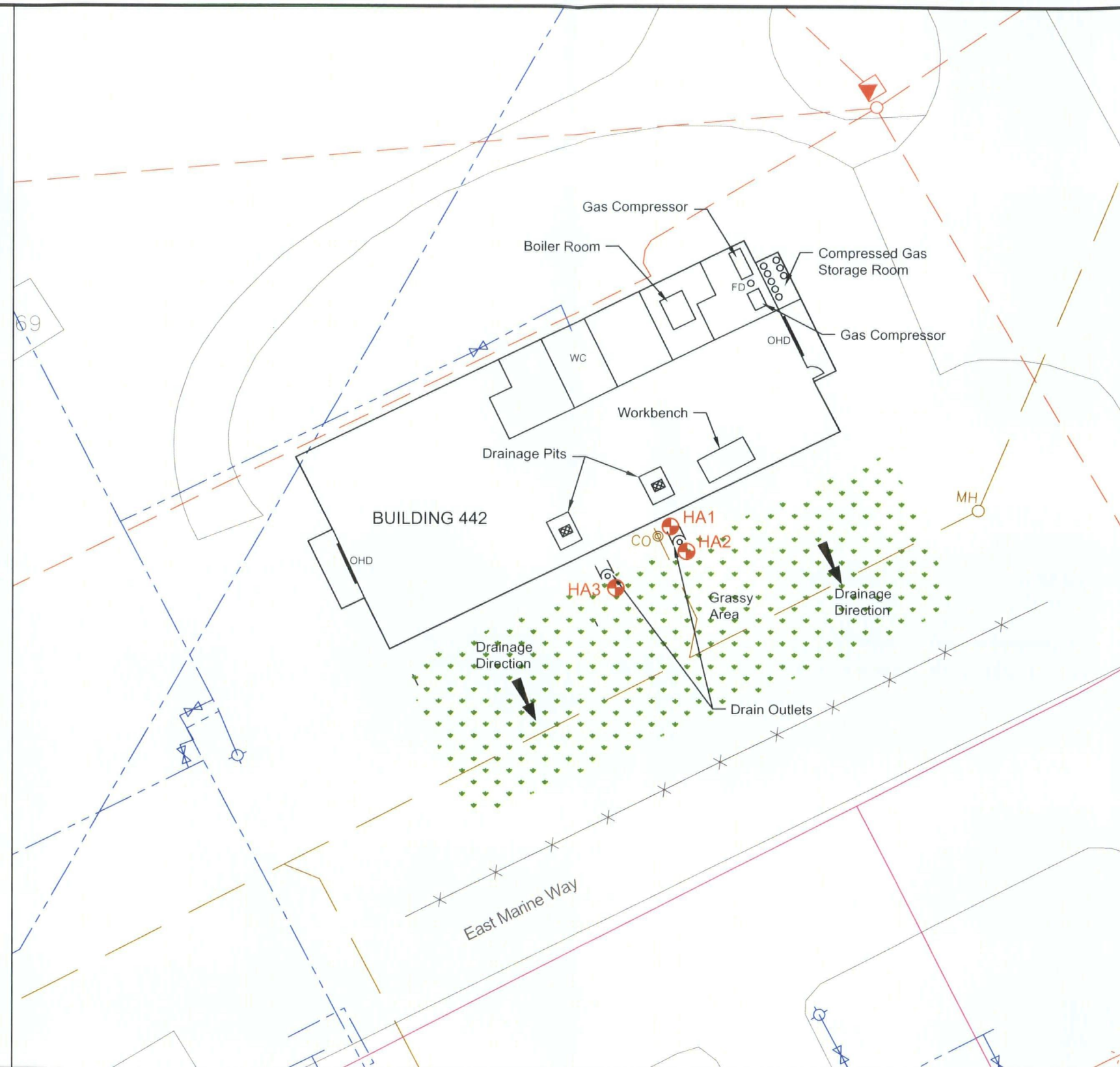
Figures



Drainage Pit Inside Building 442
(Facing Southeast)

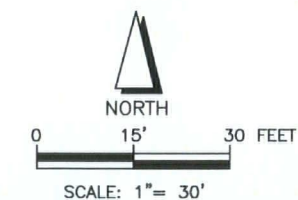


Southeast Face of Building 442
Showing Drain Outlets
(Facing West)



LEGEND:

- Sanitary Sewer
- Water Line
- Natural Gas Line
- Electrical Line
- HA1 2004 Soil Sample Location
- MH Manhole
- CO Clean Out
- Transformer
- Fire Hydrant
- Water Valve
- FD Floor Drain
- WC Restroom
- OHD Overhead Door



Note: Features and Interior Layout are Approximate and May Not be to Scale

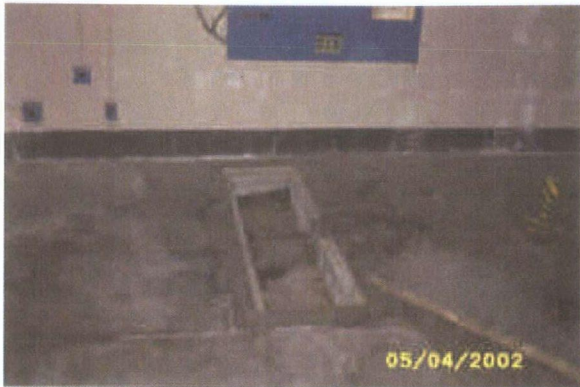
Summary Report		
Site Plan PRL 442		
Environmental Baseline Survey		
Date: 02-05	Former MCAS EI Toro	Figure 2
Project No. 54506	 EarthTech <small>A Tyco International Ltd. Company</small>	

February 2005

Summary Report for PRL 442
Former MCAS El Toro

Appendix A
Sampling Design Specification Sheet – PRL 442

File: G:\us\LongBeach\CA\work\Remediation\Projects\54506_CTO-104\EBIS\CAD\PA\Non-transferable_PRLs\Spec_Sheets\Group\Final\104_se_pr442_final_ip1.dwg Time: Feb 11, 2005 - 2:07pm



Drainage Pit Inside Building 442
(Facing Southeast)



Southeast Face of Building 442
Showing Drain Outlets
(Facing West)



LEGEND:

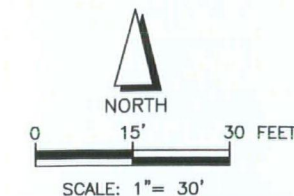
- Sanitary Sewer
- Water Line
- Natural Gas Line
- Electrical Line
- Existing Infrastructure

- HA3 Proposed Soil Sample Location
- CO Clean Out
- MH Man Hole

- Transformer
- Fire Hydrant
- Water Valve

- FD Floor Drain
- WC Restroom
- OHD Over Head Door

Note: Locations of Features and Interior Layout are Approximate



Background

The building was listed as Missile Maintenance Equipment Shop (Ordnance) in the 1973 station list. The facility description was Aviation Armament/Station in the 1997 list and is the last known description.

Two LOCs were associated with this site. UST 442 was a 110-gallon fuel oil underground storage tank that was removed and the site has been closed by OCHCA in a letter dated 9 December 1996.

SWMU 185 was a drum storage area situated north of Building 673 and south of Building 442. No further action was recommended in a letter dated 14 June 2002.

Issues/Concerns

1. The drainage pits inside the building discharge directly to the ground outside. Based on the industrial use of the facility, a potential exists for release of waste to the environment. The drainage pits are situated in an area designated as "Open Work Area." Further evaluation is recommended to assess whether releases to the environment have occurred as a result of past operations at this facility.

Investigation Design

1. Collection of two soil samples is proposed at locations HA1 and HA2, at the outlets of the drainage pits. The samples will be collected 0.5 foot below ground surface (bgs) by hand auger and analyzed for VOCs, TPHe, TPHv, explosives and perchlorate.
2. Collection of one soil sample is proposed at location HA3, near the sanitary sewer line outside the southern wall of Building 442. The sample will be collected 1 foot below the sanitary sewer invert by hand auger, and analyzed for VOCs, TPHe, TPHv, explosives and perchlorate. This sample will be used to assess if any releases to the environment occurred due to cracks in the sanitary sewer in the vicinity of the building.

References

1. Naval Facilities Engineering Command, Southwest (NFECSW SDIEGO). 2002. Memorandum: 1980 Photographs of Drum Storage Areas, MCAS, El Toro. June.

Preliminary Assessment

Final

**Proposed Sampling Locations
PRL 442**

Environmental Baseline Survey

Date: 01-05

Former MCAS El Toro

Project No.

54506

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February 2005

Summary Report for PRL 442
Former MCAS El Toro

Appendix B
Validated Laboratory Analytical Data Report

		Sample ID:	LJ325	LJ326	LJ327
		Location ID:	PRL442-HA01	PRL442-HA02	PRL442-HA03
		Sample Type:	SS	SS	SS
		Sample Depth (ft bgs):	0.5	0.5	--
		Sample Date:	14-Oct-04	14-Oct-04	14-Oct-04
Parameters	Units	Analytical Method ¹			
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	µg/kg	8260B	4.9 U	4.9 U	4.9 U
1,1,1-Trichloroethane	µg/kg	8260B	4.9 U	4.9 U	4.9 U
1,1,2,2-Tetrachloroethane	µg/kg	8260B	4.9 U	4.9 U	4.9 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/kg	8260B	4.9 U	4.9 U	4.9 U
1,1,2-Trichloroethane	µg/kg	8260B	4.9 U	4.9 U	4.9 U
1,1-Dichloroethane	µg/kg	8260B	4.9 U	4.9 U	4.9 U
1,1-Dichloroethene	µg/kg	8260B	4.9 U	4.9 U	4.9 U
1,2-Dichloroethane	µg/kg	8260B	4.9 U	4.9 U	4.9 U
1,2-Dichloropropane	µg/kg	8260B	4.9 U	4.9 U	4.9 U
1,2-Dichlorotetrafluoroethane	µg/kg	8260B	4.9 U	4.9 U	4.9 U
1,3,5-Trinitrobenzene	µg/kg	8330	260 U	260 U	260 U
1,3-Dinitrobenzene	µg/kg	8330	260 U	260 U	260 U
2,4,6-Trinitrotoluene	µg/kg	8330	260 U	260 U	260 U
2,4-Dinitrotoluene	µg/kg	8330	260 U	260 U	260 U
2,6-Dinitrotoluene	µg/kg	8330	260 U	260 U	260 U
2-Amino-4,6-Dinitrotoluene	µg/kg	8330	260 U	260 U	260 U
2-Butanone	µg/kg	8260B	97 U	98 U	98 U
2-Hexanone	µg/kg	8260B	49 U	49 U	49 U
2-Nitrotoluene	µg/kg	8330	260 U	260 U	260 U
3-Nitrotoluene	µg/kg	8330	260 U	260 U	260 U
4-Amino-2,6-Dinitrotoluene	µg/kg	8330	260 U	260 U	260 U
4-Methyl-2-Pentanone	µg/kg	8260B	49 U	49 U	49 U
4-Nitrotoluene	µg/kg	8330	260 U	260 U	260 U
Acetone	µg/kg	8260B	97 U	98 U	98 U
Benzene	µg/kg	8260B	4.9 U	4.9 U	4.9 U
Bromodichloromethane	µg/kg	8260B	4.9 U	4.9 U	4.9 U
Bromoform	µg/kg	8260B	4.9 U	4.9 U	4.9 U
Bromomethane	µg/kg	8260B	4.9 U	4.9 U	4.9 U
Carbon Disulfide	µg/kg	8260B	4.9 U	4.9 U	4.9 U
Carbon Tetrachloride	µg/kg	8260B	4.9 U	4.9 U	4.9 U
Chlorobenzene	µg/kg	8260B	4.9 U	4.9 U	4.9 U
Chlorodibromomethane	µg/kg	8260B	4.9 U	4.9 U	4.9 U
Chloroethane	µg/kg	8260B	4.9 U	4.9 U	4.9 U
Chloroform	µg/kg	8260B	4.9 U	4.9 U	4.9 U
Chloromethane	µg/kg	8260B	4.9 U	4.9 U	4.9 U
cis-1,2-Dichloroethene	µg/kg	8260B	4.9 U	4.9 U	4.9 U
cis-1,3-Dichloropropene	µg/kg	8260B	4.9 U	4.9 U	4.9 U
Dichlorodifluoromethane (F12)	µg/kg	8260B	4.9 U	4.9 U	4.9 U
Diisopropyl Ether	µg/kg	8260B	4.9 U	4.9 U	4.9 U
Ethylbenzene	µg/kg	8260B	4.9 U	4.9 U	4.9 U
Ethyl-tert-butyl ether (ETBE)	µg/kg	8260B	4.9 U	4.9 U	4.9 U
Hexahydro-1,3,5-Trinitro-1,3,5-Triazine	µg/kg	8330	260 U	260 U	260 U
Methyl tert-butyl ether	µg/kg	8260B	4.9 U	4.9 U	4.9 U
Methyl-2,4,6-Trinitrophenylnitramine	µg/kg	8330	260 U	260 U	260 U
Methylene Chloride	µg/kg	8260B	4.9 U	4.9 U	4.9 U
Nitrobenzene	µg/kg	8330	260 U	260 U	260 U
Octahydro-1,3,5,7-Tetranitro-1,3,5,7-Tetrazocine	µg/kg	8330	260 U	260 U	260 U
Perchlorate	µg/kg	E314	21 U	21 U	21 U
Styrene	µg/kg	8260B	4.9 U	4.9 U	4.9 U
tert-Amyl methyl ether (TAME)	µg/kg	8260B	4.9 U	4.9 U	4.9 U
tertiary-Butyl alcohol (TBA)	µg/kg	8260B	19 U	20 U	20 U
Tetrachloroethene	µg/kg	8260B	4.9 U	4.9 U	4.9 U
Toluene	µg/kg	8260B	4.9 U	4.9 U	4.9 U
Total xylenes	µg/kg	8260B	15 U	15 U	15 U
trans-1,2-Dichloroethene	µg/kg	8260B	4.9 U	4.9 U	4.9 U
trans-1,3-Dichloropropene	µg/kg	8260B	4.9 U	4.9 U	4.9 U
Trichloroethene	µg/kg	8260B	4.9 U	4.9 U	4.9 U
Trichlorofluoromethane	µg/kg	8260B	4.9 U	4.9 U	4.9 U
Vinyl chloride	µg/kg	8260B	4.9 U	4.9 U	4.9 U
Others					
Moisture	%	ASTM D 2216	3.5	3.4	3.4
PHC as Diesel Fuel	mg/kg	8015B DRO	100	5 J	5 J
TPH as Gasoline	mg/kg	8015B GRO	9.2 U	10 U	10 U
TPH as Motor Oil	mg/kg	8015B DRO	74	4 J	4 J

Notes:

¹ = Environmental Protection Agency Method unless otherwise noted.

U = Indicates the compound or analyte was analyzed for but was not detected at or above the stated limit.

J = Indicates an estimated value

SS = Soil Sample

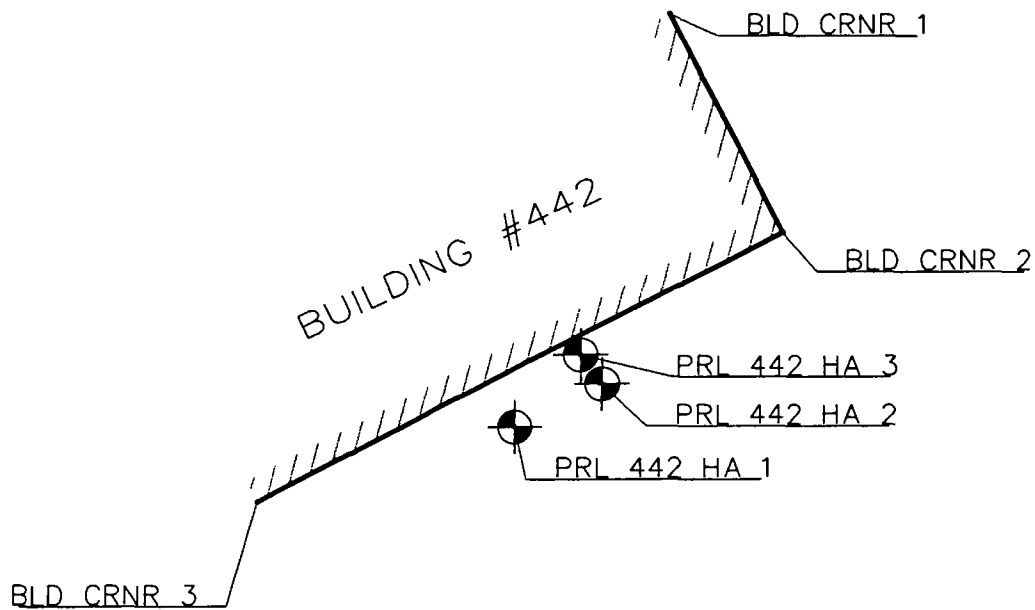
ASTM = American Society of Testing and Materials

February 2005

Summary Report for PRL 442
Former MCAS El Toro

Appendix C

Land Surveying Data



CP #37



PRL AND NOTABLE FEATURES LOCATIONS			
STATION	NORTHING	EASTING	ELEVATION
BLD CRNR 1	2189446.29	6115646.37	
BLD CRNR 2	2189401.03	6115669.71	
BLD CRNR 3	2189345.23	6115561.50	
CP #37	2189298.24	6115730.38	388.46
PRL 442 HA 1	2189360.71	6115615.21	387.88
PRL 442 HA 2	2189369.58	6115632.95	387.71
PRL 442 HA 3	2189375.65	6115628.58	389.60

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Torrance, California 90504
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Fax: (310) 327-0175
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POTENTIAL RELEASE LOCATION SKETCH

SCALE:	1" = 40'	DATE:	02-16-05
BY:	JCL	JOB NO.:	04-1058-2227.000-535

Attachment 7
Summary Report
PRL 617/618



Summary Report for PRL 617/618, Environmental Baseline Survey

**Former Marine Corps Air Station,
El Toro, California**

February 2005

Prepared for:
**Base Realignment and Closure
Program Management Office West
1230 Columbia Street, Suite 1100
San Diego, CA 92101**

Prepared by:
**Earth Tech, Inc.
841 Bishop Street, Suite 500
Honolulu, HI 96813-3920**

Prepared under:
**Comprehensive Long-Term Environmental Action Navy
Contract Number N62742-94-D-0048, CTO 0104**

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1.1 Issues and Concerns	1
2. SAMPLING AND ANALYSIS SUMMARY	1
3. INVESTIGATION RESULTS	2
3.1 Analytical Results and Quality Assurance	2
3.2 Result Evaluation and Risk Screening	2
4. CONCLUSIONS AND RECOMMENDATIONS	2
5. REFERENCES	3

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APPENDICES

A Sampling Design Specification Sheet – PRL 617/618	
B Validated Laboratory Analytical Data Reports	
C Land Surveying Data	

ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
BNI	Bechtel National Inc.
EPA	Environmental Protection Agency
HI	hazard index
MCAS	Marine Corps Air Station
µg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
PCB	polychlorinated biphenyl
PRG	preliminary remediation goal
PRL	potential release location
TPH	total petroleum hydrocarbons
VOC	volatile organic compound
VSI	visual site inspection

1. BACKGROUND

Potential Release Location (PRL) 617/618 is associated with Buildings 617 and 618, located in the southwest quadrant of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). Buildings 617 and 618 were listed as "Aircraft Sound Abatement Facilities" in the 1973 station facility list, which is the last known description. These facilities do not consist of actual structures, but were designated as buildings for listing and tracking purposes. The facilities are not currently operational and consist only of concrete slabs extending from the taxiway (see Figure 2).

One location of concern is associated with these facilities. Transformer PCB T90, which was later replaced, was located in this area.

1.1 ISSUES AND CONCERNS

The following issues and concerns associated with this PRL were identified through the records search and visual site inspections (VSIs) conducted in 2002 and 2004:

- Building 617 and 618 were identified as possible former wash racks during the 2002 VSI, which was conducted in support of the environmental baseline survey (EBS) (Earth Tech 2003). Three drains located in the center of each facility discharge into the Agua Chinon. Oils and solvents from washing activities may have migrated through cracks in the concrete of the sumps. Wash (Figure 2). No other features appear to be associated with these former facilities.

The chemicals of concern associated with these issues include volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH) associated with vehicle and jet (JP-5) fuels, and residuals from washing activities. A sampling program was proposed to further investigate the issue identified and assess whether hazardous substances or pollutants have released to the environment. A summary of soil sampling activities is presented in Section 2, and the results are presented in Section 3.

2. SAMPLING AND ANALYSIS SUMMARY

Sampling was conducted for evaluation of PRL 617/618 in October 2004. The sample locations are shown in Figure 2, and a summary of sampling and analyses is provided in Table 1. The specification sheet, which includes the rationale for the sampling design, is presented in Appendix A of this summary report.

A total of seven soil samples were collected from locations HA1, HA2, HA3, HA4, HA5, HA6, and HA7 at PRL 617/618. Soil samples from HA1 and HA4 were collected near floor drains of Buildings 617 and 618, respectively. Both these samples were collected at 4 feet below ground surface (bgs) using a hand auger.

Soil samples from HA2, HA3, HA5, and HA6 were collected at 1 foot bgs in the vicinities of Buildings 617 and 618. These samples were collected to assess the potential contamination due to runoff from the former wash rack areas. Additionally, one soil sample was collected at HA7 at 0.5 foot bgs near the storm sewer outfall south of Buildings 617 and 618.

All collected samples were analyzed for volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH). The results for TPH were reported as TPH as gasoline (TPH_g), TPH as diesel (TPH_d), and TPH as motor oils (TPH_m).

3. INVESTIGATION RESULTS

3.1 ANALYTICAL RESULTS AND QUALITY ASSURANCE

The analytical results for the samples collected at PRL 617/618, along with the United States Environmental Protection Agency (EPA) Region 9 or California-Modified residential preliminary remediation goals (PRGs), are presented in Table 2 (EPA Region 9 2004). Appendix B presents the validated laboratory analytical data and Appendix C presents the land surveying data.

Some results were qualified as estimated or non-detect in the data validation process. These qualifications do not affect the findings or conclusions of this report.

3.2 RESULT EVALUATION AND RISK SCREENING

The main contributor to the TPH detection at HA7 is from the group of TPHs associated with motor oil. The detection at HA7 is assessed to be representative of the maximum concentration in soil as it is adjacent to the source of release (i.e., storm drain outfall) and no other sources are known to exist or to have existed in the vicinity. Therefore, the concentrations of TPHs at HA7 are not indicative of a release and may be due to residuals from aircraft washing activities at PRL 617/618 and/or runoff from the runways.

None of the detected VOCs exceeded their respective PRGs.

Risk screening was performed to evaluate risks associated with potential exposures to chemicals of potential concern (detected analytes) in the soil at PRL 617/618. The methodology for risk screening is presented in Section 3.2 of the Summary Report and results are presented in Table 3.

The cumulative maximum noncancer hazard associated with potential exposure to maximum detected concentrations of VOCs is expressed as a hazard index (HI) of 2.2E-6, which is below the target HI of 1.

4. CONCLUSIONS AND RECOMMENDATIONS

The primary objective of investigations conducted at PRL 617/618 was to assess whether hazardous substances or pollutants were released to the environment. A review of available records, VSIs, and soil sampling indicate that no significant release of hazardous substances or pollutants has occurred at PRL 617/618. This conclusion is supported by the observation that detected concentrations of chemicals of concern were less than their respective residential PRGs or at concentrations that are not indicative of a significant release. The noncancer risk at this PRL is less than the target HI of 1. Therefore, no further investigation is recommended for PRL 617/618.

5. REFERENCES

Bechtel National, Inc. (BNI). 1996. *Final Technical Memorandum, Background and Reference Levels, Remedial Investigations, Marine Corps Air Station El Toro, California*. San Diego, California: NAVFAC EFD SOUTHWEST.

Environmental Protection Agency, United States (EPA). 2004. *SW-846 On-Line, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*.
<http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm>. Office of Solid Waste.

Environmental Protection Agency, United States, Region 9 (EPA Region 9). 2004. EPA Region 9 PRGs [Preliminary Remediation Goals] Tables. San Francisco, California. October.

Tables

Table 1: Sampling and Analyses Summary – PRL 617/618

Sample Location	EPA ID	Sample Depth (bgs)	Sampling Technique	Analyte Group and Analytical Method ^a	
				VOCs 8260B	TPH ^b 8015B
HA1	LJ319	4 feet	Hand Auger	X	X
HA2	LJ320	1 foot	Hand Auger	X	X
HA3	LJ321	1 foot	Hand Auger	X	X
HA4	LJ316	4 feet	Hand Auger	X	X
HA5	LJ317	1 foot	Hand Auger	X	X
HA6	LJ318	1 foot	Hand Auger	X	X
HA7	LJ322	0.5 feet	Hand Auger	X	X

Notes:

^a Analysis was in general accordance with the listed methods provided in EPA Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

^b Analytical results for TPH were reported as total petroleum hydrocarbons as gasoline (TPH_g), total petroleum hydrocarbons as diesel (TPH_d), and total petroleum hydrocarbons as motor oils (TPH_m).

X = analysis was performed for the specified analyte.

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Summary Report for PRL 617/618
Former MCAS El Toro

Table 2. Analytical Results Summary - PRL 617/618

Analyte	Residential Soil PRG*	Sample Location	PRL 617/618- HA1	PRL 617/618- HA2	PRL 617/618- HA3	PRL 617/618- HA4	PRL 617/618- HA5	PRL 617/618- HA6	PRL 617/618- HA7
		Sample Depth	4 feet bgs	1 foot bgs	1 foot bgs	4 feet bgs	1 foot bgs	1 foot bgs	0.5 feet bgs
		Sample Name	LJ319	LJ320	LJ321	LJ316	LJ317	LJ318	LJ322
Volatile Organic Compounds (µg/kg)									
Acetone	1.4E+07		100 U	120 U	94 U	100 U	120 U	110 U	10 J
Ethyl Tertiary Butyl Ether	--		5 U	6.1 U	4.7 U	0.7 J	5.8 U	0.6 J	6.3 U
Toluene	5.2E+05		0.7 J	6.1 U	4.7 U	1 J	0.9 J	1 J	6.3 U
Total Petroleum Hydrocarbons (mg/kg)									
TPH as Diesel	--		11 U	13 U	11 U	11 U	12 U	12 U	17
TPH as Motor Oil	--		11 U	13 U	7 J	11 U	12 U	1 J	100

Notes

U = Indicates the compound or analyte was analyzed for but was not detected at or above the stated limit.

J = Indicates an estimated value

-- = Value does not exist

* = Analytical results were compared to EPA Region 9 PRGs (2004)

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Summary Report for PRL 617/618
Former MCAS El Toro

Table 3: Risk Screening - PRL 617/618

Chemical of Potential Concern	Maximum EPC ^a (µg/kg)	Carcinogenic PRG ^b (µg/kg)	Noncarcinogenic PRG ^b (µg/kg)	Risk Corresponding to Maximum EPC			
				Carcinogenic		Noncarcinogenic	
				Excess Cancer Risk ^b	Percent Contribution to Cancer Risk ^d	HI ^e	Percent Contribution to Noncancer Risk ^d
Volatile Organic Compounds							
Acetone	10	--	1.4E+07	--	--	0.000001	32%
Ethyl Tertiary Butyl Ether	0.7	--	--	--	--	--	--
Toluene	1	--	6.6E+05	--	--	0.000002	68%
Cumulative Maximum Risk				0.0E+00		2.2E-06	

Notes:

-- = Value does not exist

^a EPC = exposure point concentration

^b EPA Region 9 PRGs (2004).

^c Excess cancer risk = $1E-06 \times (\text{Maximum EPC}/\text{Carcinogenic PRG})$

^d With respect to cumulative excess cancer risk/hazard index

^e HI = Maximum EPC / Noncarcinogenic PRG

Figures

File: C:\Documents and Settings\Jeffrey.waugen\My Documents\cod_dwg\Working\CTO 104\Group 1 SR\SR PRL 617.dwg Time: Feb 18, 2005 - 1:56pm



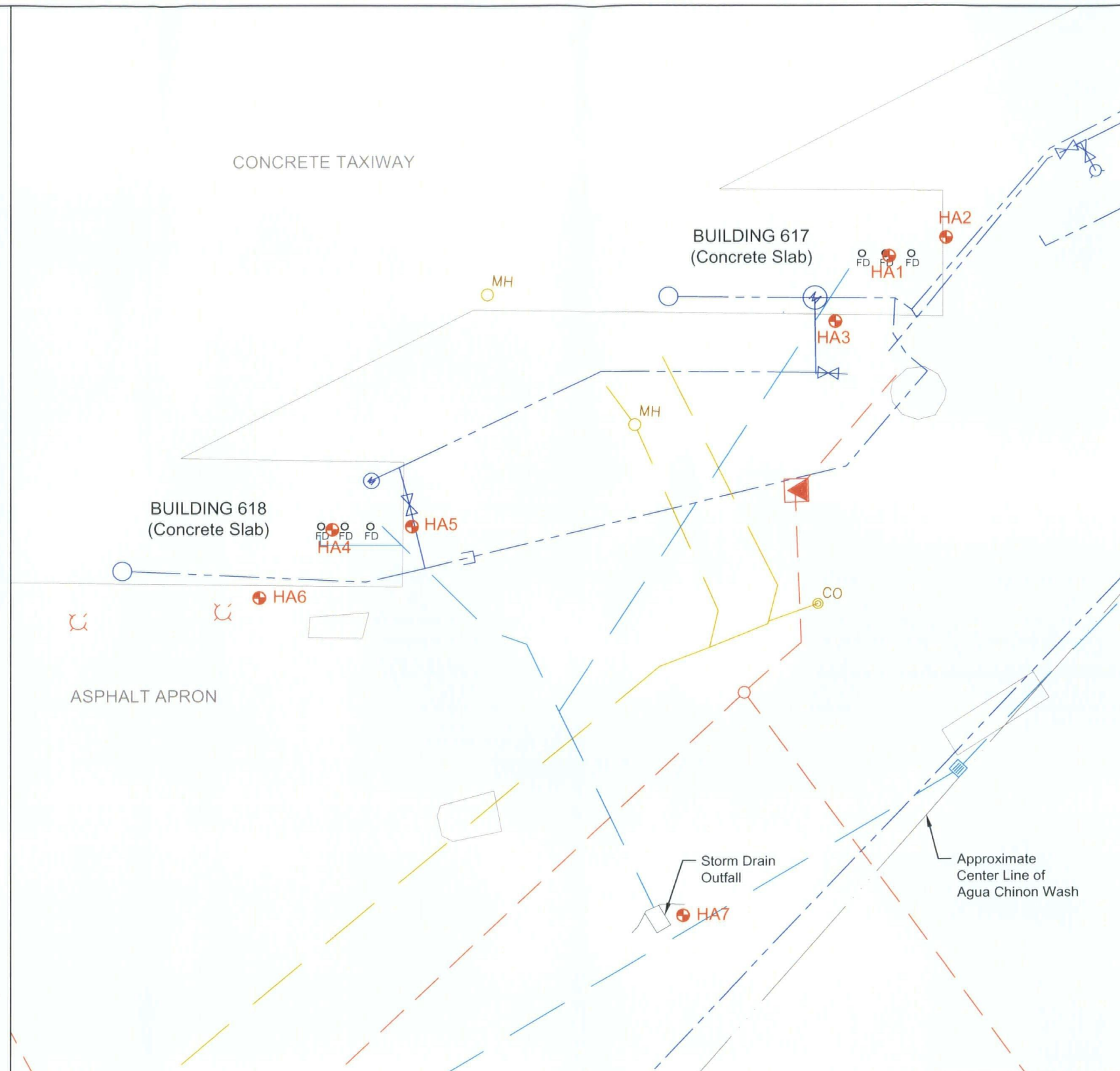
Building 618 in Foreground and 617 in Background with Hydrant and Elevated Hose (Facing East)



Possible Former Washrack (Facing West)

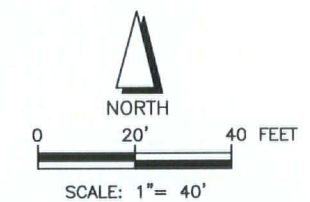


Floor Drains at Building (Facing East)



LEGEND:

- Sanitary Sewer
- Water Line
- Natural Gas Line
- Electrical Line
- HA6 + 2004 Soil Sample Location
- CO Clean Out
- MH Manhole
- Catch Basin
- FD Floor Drain
- Transformer
- Fire Hydrant
- Water Valve
- Meter



Note: Features and Interior Layout are Approximate and May Not be to Scale

Summary Report

Site Plan
PRL 617 & 618

Environmental Baseline Survey

Date: 02-05

Former MCAS El Toro

Project No.

54506

EarthTech
A Tyco International Ltd. Company

Figure

2

February 2005

Summary Report for PRL 617/618
Former MCAS El Toro

Appendix A
Sampling Design Specification Sheet – PRL
617/618

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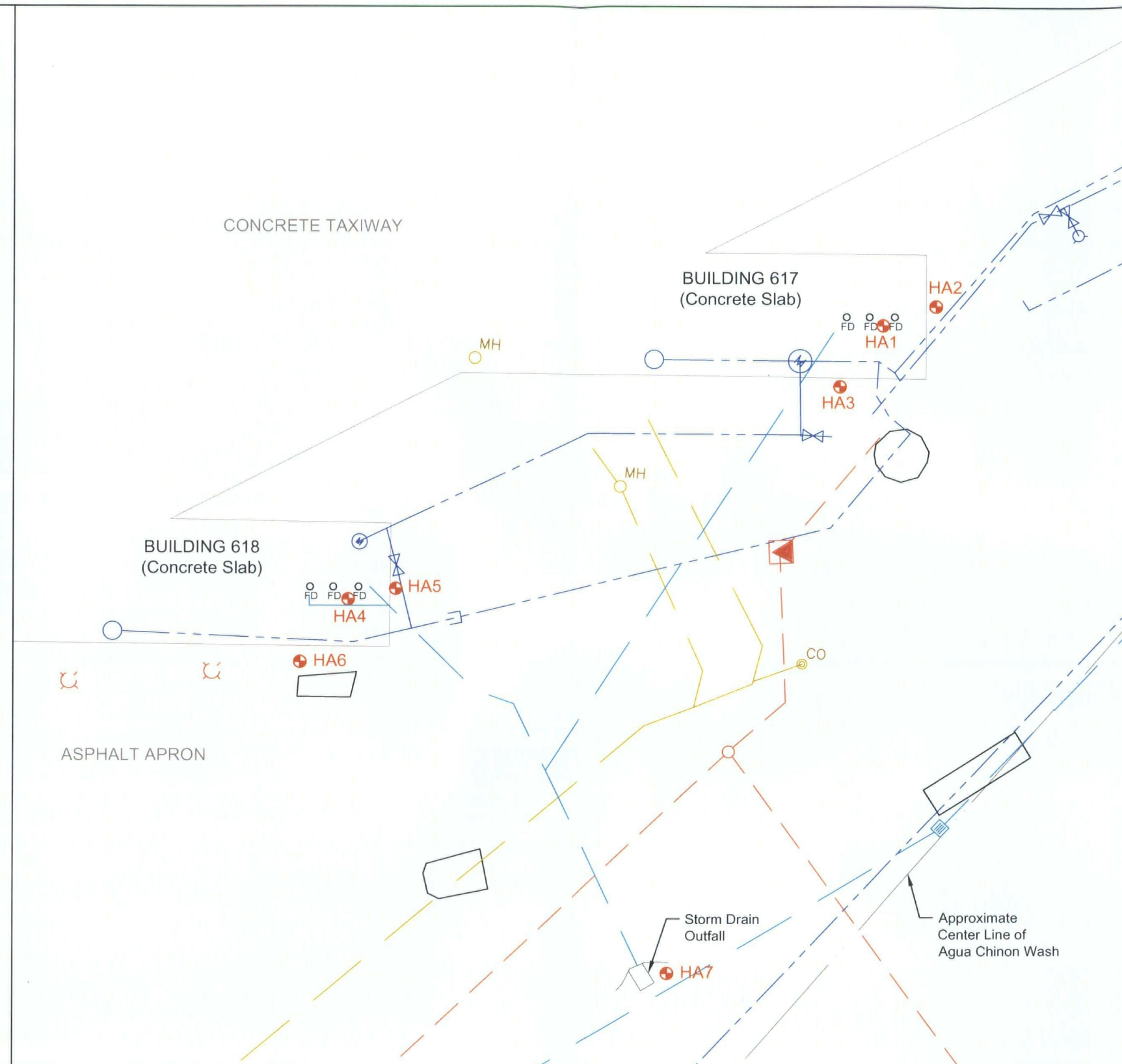
Building 618 in Foreground and 617 in Background with Hydrant and Elevated Hose (Facing East)



Possible Former Washrack (Facing West)



Floor Drains at Building (Facing East)



Background

The buildings were listed as Aircraft Sound Abatement Facilities in the 1973 station facility list. The last known descriptions of Buildings 617 and 618 are Aircraft Sound Abatement Facilities. These facilities do not consist of actual structures but were designated as buildings for listing and tracking purposes. The facilities are not currently operational and consist only of concrete slabs extending from the taxiway. One location of concern is associated with these facilities. PCB T90 was a transformer that was replaced.

Issues/Concerns

These facilities were identified as possible former wash racks during 2002 VSI conducted in support of the EBS. Three drains are located in the center of each facility. These drains discharge into the Agua Chinon Wash. No other features appear to be associated with these former facilities. Further evaluation is recommended to assess whether releases of waste to the environment have occurred as a result of past operations at these facilities.

Investigation Design

1. Collection of two soil samples is proposed at locations HA1 and HA4, near the floor drains at Buildings 617 and 618. The samples will be collected 1 foot below the sewer invert by hand auger and analyzed for VOCs, TPHe, and TPHv.
2. Collection of four soil samples is proposed at locations HA2, HA3, HA5, and HA6, in the vicinities of former wash racks. These samples will be used to assess potential contamination due to runoff from the fueling stations. All the samples will be collected 1 foot below ground surface (bgs) by hand auger and analyzed for VOCs, TPHe, and TPHv.
3. Collection of one soil sample is proposed at location HA7 near the storm sewer outfall south of Buildings 617 and 618. The sample will be collected 0.5 feet bgs by hand auger and analyzed for VOCs, TPHe, and TPHv.

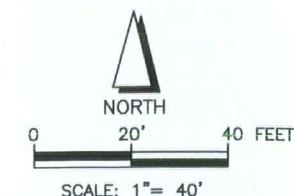
LEGEND:

- Sanitary Sewer
- Water Line
- Electrical Line
- Storm Drain
- Existing Infrastructure

- HA6 + Proposed Soil Sample Location
- CO Clean Out
- MH Manhole
- Catch Basin

- FD Floor Drain
- Transformer
- Fire Hydrant
- Water Valve
- Meter

Note: Locations of Features and Interior Layout are Approximate



Preliminary Assessment

Final

Proposed Sampling Locations PRL 617 & 618

Environmental Baseline Survey

Date: 01-05	Former MCAS EI Toro	
Project No. 54506	EarthTech A Tyco International Ltd. Company	

February 2005

Summary Report for PRL 617/618
Former MCAS El Toro

Appendix B
Validated Laboratory Analytical Data Report

Sample ID:			LJ316	LJ317	LJ318	LJ319	LJ320	LJ321	LJ322
Location ID:			PRL617/618-HA04	PRL617/618-HA05	PRL617/618-HA06	PRL617/618-HA01	PRL617/618-HA02	PRL617/618-HA03	PRL617/618-HA07
Sample Type:			SS	SS	SS	SS	SS	SS	SS
Sample Depth (ft bgs):			4.0	1.0	1.0	4.0	1.0	1.0	0.5
Sample Date:			14-Oct-04	14-Oct-04	14-Oct-04	14-Oct-04	14-Oct-04	14-Oct-04	14-Oct-04
Parameter	Unit	Analytical Method ¹							
Volatile Organic Compounds									
1,1,1,2-Tetrachloroethane	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
1,1,1-Trichloroethane	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
1,1,2,2-Tetrachloroethane	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
1,1,2-Trichloroethane	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
1,1-Dichloroethane	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
1,1-Dichloroethene	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
1,2-Dichloroethane	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
1,2-Dichloropropane	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
1,2-Dichlorotetrafluoroethane	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
2-Butanone	µg/kg	8260B	100 U	120 U	110 U	100 U	120 U	94 U	130 U
2-Hexanone	µg/kg	8260B	51 U	58 U	55 U	50 U	61 U	47 U	63 U
4-Methyl-2-Pentanone	µg/kg	8260B	51 U	58 U	55 U	50 U	61 U	47 U	63 U
Acetone	µg/kg	8260B	100 U	120 U	110 U	100 U	120 U	94 U	10 J
Benzene	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
Bromodichloromethane	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
Bromoform	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
Bromomethane	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
Carbon Disulfide	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
Carbon Tetrachloride	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
Chlorobenzene	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
Chlorodibromomethane	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
Chloroethane	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
Chloroform	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
Chloromethane	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
cis-1,2-Dichloroethene	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
cis-1,3-Dichloropropene	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
Dichlorodifluoromethane (F12)	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
Diisopropyl Ether	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
Ethylbenzene	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
Ethyl-tert-butyl ether (ETBE)	µg/kg	8260B	0.7 J	5.8 U	0.6 J	5 U	6.1 U	4.7 U	6.3 U
Methyl tert-butyl ether	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
Methylene Chloride	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
Styrene	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
tert-Amyl methyl ether (TAME)	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
tertiary-Butyl alcohol (TBA)	µg/kg	8260B	21 U	23 U	22 U	20 U	24 U	19 U	25 U
Tetrachloroethene	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
Toluene	µg/kg	8260B	1 J	0.9 J	1 J	0.7 J	6.1 U	4.7 U	6.3 U
Total xylenes	µg/kg	8260B	15 U	17 U	16 U	15 U	18 U	14 U	19 U
trans-1,2-Dichloroethene	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U

Sample ID:			LJ316	LJ317	LJ318	LJ319	LJ320	LJ321	LJ322
Location ID:			PRL617/618-HA04	PRL617/618-HA05	PRL617/618-HA06	PRL617/618-HA01	PRL617/618-HA02	PRL617/618-HA03	PRL617/618-HA07
Sample Type:			SS	SS	SS	SS	SS	SS	SS
Sample Depth (ft bgs):			4.0	1.0	1.0	4.0	1.0	1.0	0.5
Sample Date:			14-Oct-04	14-Oct-04	14-Oct-04	14-Oct-04	14-Oct-04	14-Oct-04	14-Oct-04
Parameter	Unit	Method ¹							
Volatile Organic Compounds:									
trans-1,3-Dichloropropene	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
Trichloroethene	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
Trichlorofluoromethane	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
Vinyl chloride	µg/kg	8260B	5.1 U	5.8 U	5.5 U	5 U	6.1 U	4.7 U	6.3 U
Other									
Moisture	%	ASTM D 2216	10.6	18.4	13.1	10.7	21.6	6	2.6
Petroleum Hydrocarbons									
PHC as Diesel Fuel	mg/kg	8015B DRO	11 U	12 U	12 U	11 U	13 U	11 U	17
TPH as Gasoline	mg/kg	8015B GRO	9.1 U	11 U	11 U	9 U	11 U	8.9 U	12 U
TPH as Motor Oil	mg/kg	8015B DRO	11 U	12 U	1 J	11 U	13 U	7 J	100

Notes:

¹ = Environmental Protection Agency Method unless otherwise noted.

U = Indicates the compound or analyte was analyzed for but was not detected at or above the stated limit.

J = Indicates an estimated value

SS = Soil Sample

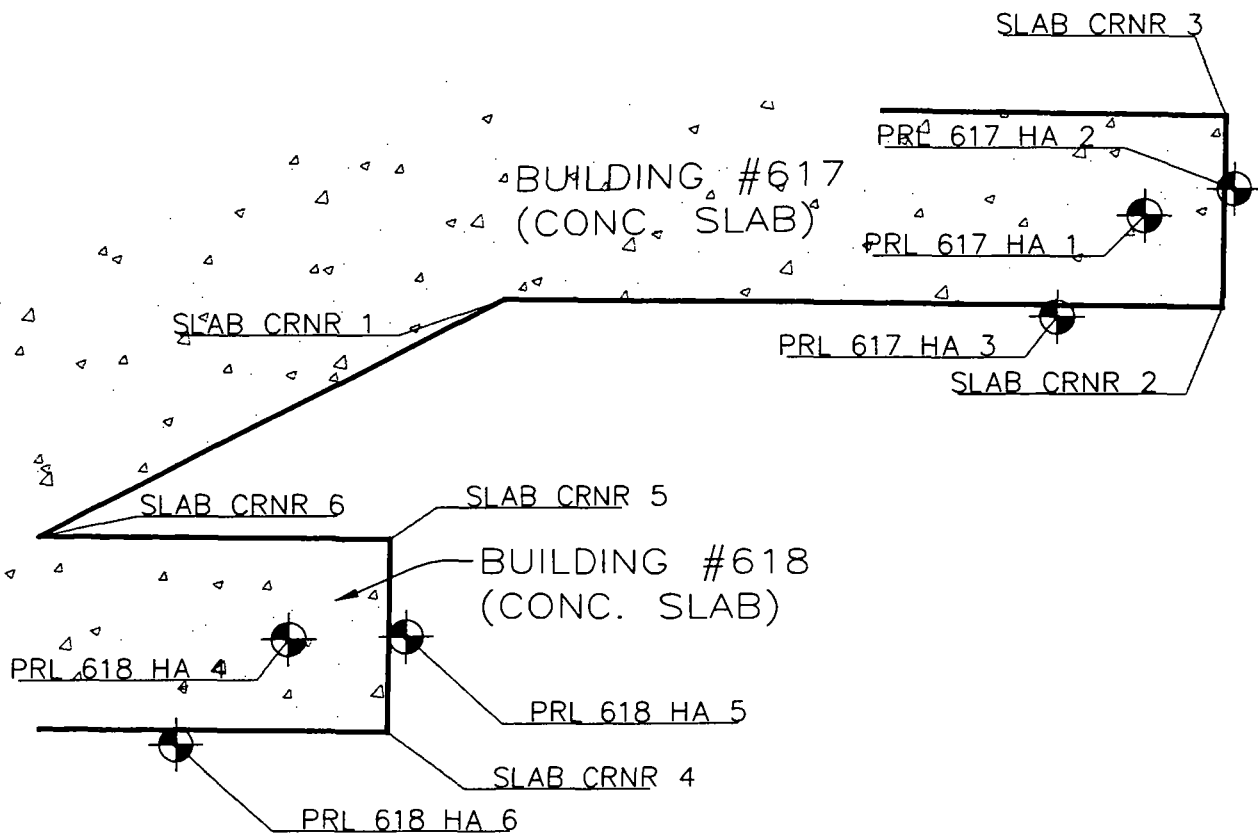
ASTM = American Society of Testing and Materials

February 2005

Summary Report for PRL 617/618
Former MCAS El Toro

Appendix C

Land Surveying Data



PRL AND NOTABLE FEATURES LOCATIONS

STATION	NORTHING	EASTING	ELEVATION
SLAB CRNR 1	2189971.41	6113449.97	351.36
SLAB CRNR 2	2189969.79	6113597.64	354.46
SLAB CRNR 3	2190009.54	6113598.14	354.48
SLAB CRNR 4	2189881.65	6113426.26	350.71
SLAB CRNR 5	2189921.61	6113426.71	350.74
SLAB CRNR 6	2189922.29	6113354.78	349.37
PRL 617 HA 1	2189988.70	6113581.65	354.24
PRL 617 HA 2	2189994.32	6113599.95	354.53
PRL 617 HA 3	2189967.71	6113564.11	353.93
PRL 618 HA 4	2189900.79	6113405.99	350.31
PRL 618 HA 5	2189901.35	6113430.00	350.74
PRL 618 HA 6	2189878.97	6113382.98	349.92

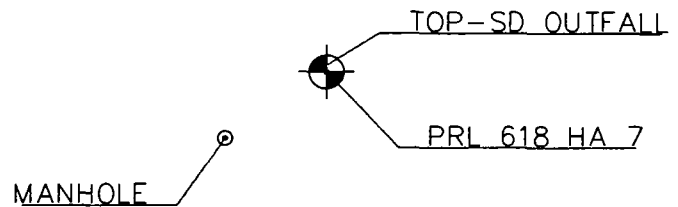
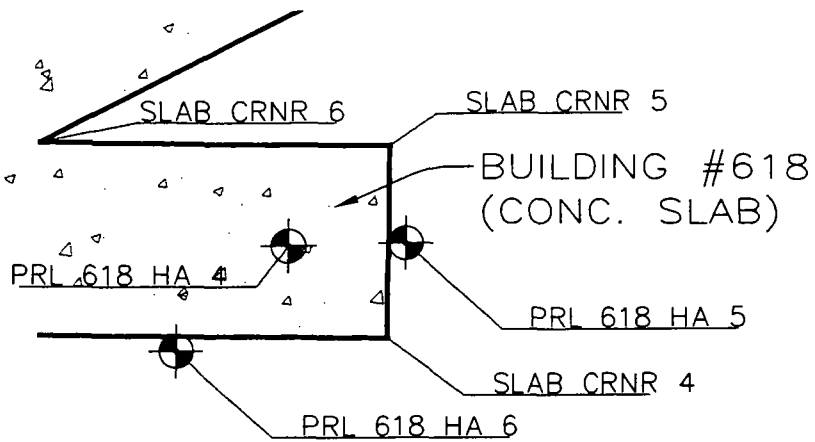


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ENGINEERING
GROUP

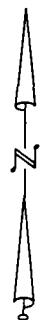
17625 Crenshaw Blvd., Ste. 300
Torrance, California 90504
Tel: (310) 327-0018
Fax: (310) 327-0175
www.dcacivileng.com

POTENTIAL RELEASE LOCATION SKETCH

SCALE: 1" = 40' DATE: 02-16-05
BY: JCL JOB NO.: 04-1058-2227.000-535



PRL AND NOTABLE FEATURES LOCATIONS			
STATION	NORTHING	EASTING	ELEVATION
MANHOLE	2189741.24	6113532.61	349.70
TOP-SD OUTFALL	2189755.48	6113551.96	347.44
PRL 618 HA 7	2189755.01	6113553.45	343.91



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POTENTIAL RELEASE LOCATION SKETCH

SCALE: 1" = 40' DATE: 02-16-05
BY: JCL JOB NO.: 04-1058-2227.000-535

Attachment 8
Summary Report
PRL 671/672



Summary Report for PRL 671/672, Environmental Baseline Survey

**Former Marine Corps Air Station,
El Toro, California**

February 2005

Prepared for:
**Base Realignment and Closure
Program Management Office West
1230 Columbia Street, Suite 1100
San Diego, CA 92101**

Prepared by:
**Earth Tech, Inc.
841 Bishop Street, Suite 500
Honolulu, HI 96813-3920**

Prepared under:
**Comprehensive Long-Term Environmental Action Navy
Contract Number N62742-94-D-0048, CTO 0104**

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B Validated Laboratory Analytical Data Reports	
B Land Surveying Data	

ACRONYMS AND ABBREVIATIONS

APHO	aerial photograph anomaly
bgs	below ground surface
BNI	Bechtel National Inc.
EPA	Environmental Protection Agency
HI	hazard index
LOC	location of concern
MCAS	Marine Corps Air Station
mg/kg	milligrams per kilogram
NFA	no further action
NFECWS SDIEGO	Naval Facilities Engineering Command, Southwest
OWS	oil/water separator
PCB	polychlorinated biphenyl
PRG	preliminary remediation goal
PRL	potential release location
RWQCB	Regional Water Quality Control Board
SWMU	Solid Waste Management Unit
TAA	temporary accumulation area
TPH	total petroleum hydrocarbons
UST	underground storage tank
VOCs	volatile organic compounds
VSI	visual site inspection

1. BACKGROUND

Potential Release Location (PRL) 671/672 is associated with Buildings 671 and 672, located in the southwest quadrant of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). Building 671 was listed as "Administrative" in the 1973 station list. The facility description was "Refueler Administration and Refueling Vehicle Parking Area" in the 1997 list, which is the last known description of Building 671. Building 672 was listed as "Refueling Vehicle Shop" in the 1973 list. The facility description was "Refueling Vehicle Maintenance Shop" in the 1997 list, which is the last known description of Building 672. The current site consists of an asphalted area with four concrete pads, on which refueling trucks were parked, and Building 672 is a vehicle wash rack. Figure 2 shows the plan of Buildings 671 and 672 and the surrounding area.

Two locations of concern (LOCs) are associated with Building 671. Temporary accumulation area (TAA) 671 was a less-than-90-day accumulation point for which sampling results were below residential preliminary remediation goals (PRGs). No further action (NFA) has been recommended, and regulatory agency concurrence is pending. PCB T90 was a transformer that contained polychlorinated biphenyls (PCBs) and was replaced with a non-PCB transformer. The 1994 field survey for PCB-transformer evaluation indicated no evidence of release.

Five LOCs are associated with Building 672. Aerial photograph anomaly (APHO) 112 was created based on an anomaly identified on a 1975 aerial photograph consisting of stored drums. The California Department of Toxic Substances Control (DTSC) has concurred with NFA for this site as stated in a letter dated 25 June 2003. TAA 672 (subsequently identified as Solid Waste Management Unit (SWMU) 177) was a less-than-90-day accumulation point, for which sampling results were below residential PRGs. NFA has been recommended, and regulatory agency concurrence is pending. OWS 672A was a 400-gallon oil/water separator (OWS) that has been removed. Regional Water Quality Control Board (RWQCB) concurred with NFA as stated in a letter dated 10 January 2003. Underground storage tank (UST) 672 was a 500-gallon, waste JP-5 tank that was removed in 1997. RWQCB concurred with NFA as stated in a letter dated 2 April 1999. UST 672B was a 1,000-gallon, waste oil tank that was removed in 1997. RWQCB concurred with NFA as stated in a letter dated 2 April 1999.

1.1 ISSUES AND CONCERNS

The following issues and concerns associated with this PRL were identified through the records search and visual site inspections (VSIs) conducted in 2002 and 2004:

- Damaged asphalt in the refueling vehicle parking area, possibly due to waste discharges, was observed during the 2002 VSI conducted in support of the environmental baseline survey (EBS). Drainage of the parking area is to the southwest with subsequent discharge to a storm drain situated at the intersection of R Street and South Marine Way.
- Building 672 is a vehicle wash rack that has not been evaluated for potential releases to the environment. Two catch basins located to the north and south of the wash rack collected wastewater for transfer to the OWS. Oils and solvents from washing activities may have migrated through cracks in the concrete of the sumps.

Further evaluation was recommended to assess whether wastes were released to the environment as a result of past operations at this facility. The chemicals of concern associated with these issues include volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH) associated with truck and jet fuel (JP-5), and residuals from washing activities. Previous sampling was

conducted to investigate LOCs: USTs 672 and 672B, and TAA 672/SWMU 177. The sampling locations and analyte lists are presented in Figure 2; however, they do not coincide with the current issues and concern.

A sampling program was proposed to further investigate the issues identified and assess whether hazardous substances or pollutants have released to the environment. A summary of soil sampling activities is presented in Section 2, and the results are presented in Section 3.

2. SAMPLING AND ANALYSIS SUMMARY

Sampling was conducted for evaluation of PRL 671/672 in October 2004. The sample locations are shown in Figure 2, and a summary of sampling and analyses is provided in Table 1. The specification sheet, which includes the rationale for the sampling design, is presented in Appendix A of this summary report.

Four soil samples were collected from locations HA1, HA2, HA3, and HA4 at PRL 671/672. Soil samples from HA1 and HA2 were collected below areas of damaged asphalt at 1 foot below ground surface (bgs) using a hand auger and analyzed for VOCs and TPH. Soil samples from HA3 and HA4 were collected at 3 and 3.5 feet below the bottom of the catch basins, respectively, using a hand auger and analyzed for VOCs and TPH. The results for TPH were reported as TPH as gasoline (TPH_g), TPH as diesel (TPH_d), and TPH as motor oils (TPH_m).

3. INVESTIGATION RESULTS

3.1 ANALYTICAL RESULTS AND QUALITY ASSURANCE

The analytical results for the samples collected at PRL 671/672, along with the United States Environmental Protection Agency (EPA) Region 9 or California-Modified residential PRGs, are presented in Table 2 (EPA Region 9 2004). Appendix B presents the validated laboratory analytical data and Appendix C presents the land surveying data.

Some results were qualified as estimated in the data validation process. These qualifications do not affect the findings or conclusions of this report.

3.2 RESULT EVALUATION AND RISK SCREENING

The main contributor to the TPH detection at HA4 is from the group of TPHs associated with diesel fuel. The detection at HA7 is assessed to be representative of the maximum concentration in soil as it is adjacent to the nearest source of release, the wash rack catch basin. The other sources of petroleum hydrocarbons in the vicinity were underground tanks used to store diesel fuel and jet fuel. These tanks have since been removed and the sites closed by regulatory agencies. Therefore, the concentrations of petroleum hydrocarbons in the soil sample do not indicate that there has been a significant release to the soil via the wash rack catch basin.

Risk screening was performed to evaluate risks associated with potential exposures to chemicals of potential concern (detected analytes) in the soil at PRL 671/672. The methodology for risk screening is presented in Section 3.2 of the Summary Report and results are presented in Table 3.

The cumulative maximum noncancer hazard associated with potential exposure to maximum detected concentrations of acetone is expressed as a hazard index (HI) of 4.3E-7, which is below the target HI of 1.

4. CONCLUSIONS AND RECOMMENDATIONS

The primary objective of investigations conducted at PRL 671/672 was to assess whether hazardous substances or pollutants were released to the environment. The concentrations of TPH in the soil samples do not indicate that there has been a significant release of hydrocarbons to the soil via the wash rack catch basins or the damaged asphalt. Other analytes, including VOCs, were not detected above laboratory reporting limits in any of the soil samples. Based on these results, no further investigation is recommended for PRL 671/672.

5. REFERENCES

- Bechtel National, Inc. (BNI). 1996. *Final Technical Memorandum, Background and Reference Levels, Remedial Investigations, Marine Corps Air Station El Toro, California*. San Diego, California: NAVFAC EFD SOUTHWEST.
- Environmental Protection Agency, United States (EPA). 2004. *SW-846 On-Line, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*.
<http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm>. Office of Solid Waste.
- Environmental Protection Agency, United States, Region 9 (EPA Region 9). 2004. *EPA Region 9 PRGs [Preliminary Remediation Goals] Tables*. San Francisco, California. October.
- OHM Remediation Services Corp. 1998. Tank Removal and Site Closure Report, Underground Storage Tanks 672 and 672B, Marine Corps Air Station El Toro, CA. March.
- NFEC SW SDIEGO. 2002. Summary Report, Former Temporary Accumulation Area (TAA) 672, Solid Waste Management Unit (SWMU) 177, Former Marine Corps Air Station El Toro, CA. March.

Tables

Table 1: Sampling and Analyses Summary - PRL 671/672

Sample Location	EPA ID	Sample Depth (feet bgs)	Sampling Technique	Analyte Group and Analytical Method ^a	
				VOCs 8260B	TPH ^b 8015B
HA1	LJ313	1.0	Hand Auger	X	X
HA2	LJ312	1.0	Hand Auger	X	X
HA3	LJ310	3.5	Hand Auger	X	X
HA4	LJ311	3.0	Hand Auger	X	X

Notes:

^a Analysis was in general accordance with the listed methods provided in EPA Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

^b Analytical results for TPH were reported as total petroleum hydrocarbons as gasoline (TPH_g), total petroleum hydrocarbons as diesel (TPH_d), and total petroleum hydrocarbons as motor oils (TPH_m).

X = analysis was performed for the specified analyte

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Former MCAS El Toro

Table 2. Analytical Results Summary - PRL 671/672

Analyte	MCAS El Toro Background Concentrations (95th Quantile) ^a	Residential Soil PRG ^b	Sample Location	PRL 671/672-HA1	PRL 671/672-HA2	PRL 671/672-HA3	PRL 671/672-HA4
			Sample Depth	1 foot bgs	1 foot bgs	3.5 feet bgs	3 feet bgs
			Sample Name	LJ313	LJ312	LJ310	LJ311
Total Petroleum Hydrocarbons (mg/kg)							
TPH as Gasoline	--	--		8.9U	9.9U	9.7U	0.02
TPH as Diesel	--	--		11U	12U	10	200
TPH as Motor Oil	--	--		11U	1	8	10
Volatile Organic Compounds (mg/kg)							
Acetone	--	1.4E+07		110U	120U	110U	6

Notes

-- = Value does not exist

U = Indicates the compound or analyte was analyzed for but was not detected at or above the stated limit.

^a = Source: BNI, 1996

^b = Analytical results were compared to EPA Region 9 PRGs (2004).

February 2005

Summary Report for PRL 671/672
Former MCAS El Toro

Table 3: Risk Screening Results - PRL 671/672

Chemical of Potential Concern	MCAS El Toro Background Concentrations (95th Quantile) ^a	Maximum EPC ^b (mg/kg)	Carcinogenic PRG ^c (mg/kg)	Noncarcinogenic PRG ^c (mg/kg)	Risk Corresponding to Maximum EPC			
					Carcinogenic		Noncarcinogenic	
					Excess Cancer Risk ^d	Percent Contribution to Cancer Risk ^e	HI ^f	Percent Contribution to Noncancer Risk ^e
Volatile Organic Compounds								
Acetone		6	--	1.4E+07	--	--	4.3E-07	100%
Cumulative Maximum Risk					0.0E+00		4.3E-07	

Notes:

^a = Source: BNI, 1996

^b EPC = exposure point concentration

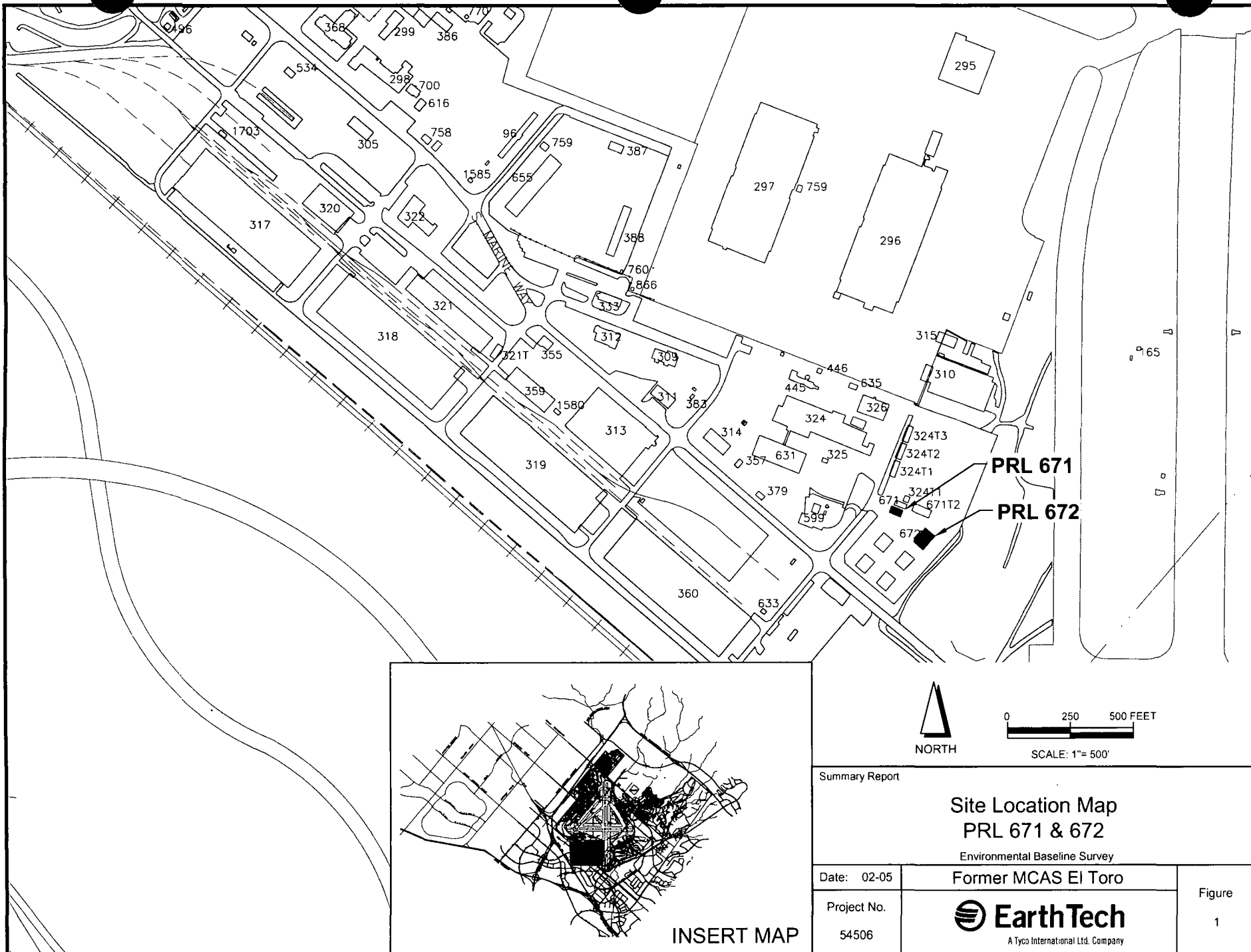
^c EPA Region 9 PRGs (2004).

^d Excess cancer risk = $1E-06 \times (\text{Maximum EPC}/\text{Carcinogenic PRG})$

^e With respect to cumulative excess cancer risk or hazard index (including metals with background)

^f HI = Maximum EPC / Noncarcinogenic PRG

Figures



Summary Report

Site Location Map PRL 671 & 672

Environmental Baseline Survey

Date: 02-05

Former MCAS El Toro

Project No.

54506

EarthTech
A Tyco International Ltd. Company

Figure

1



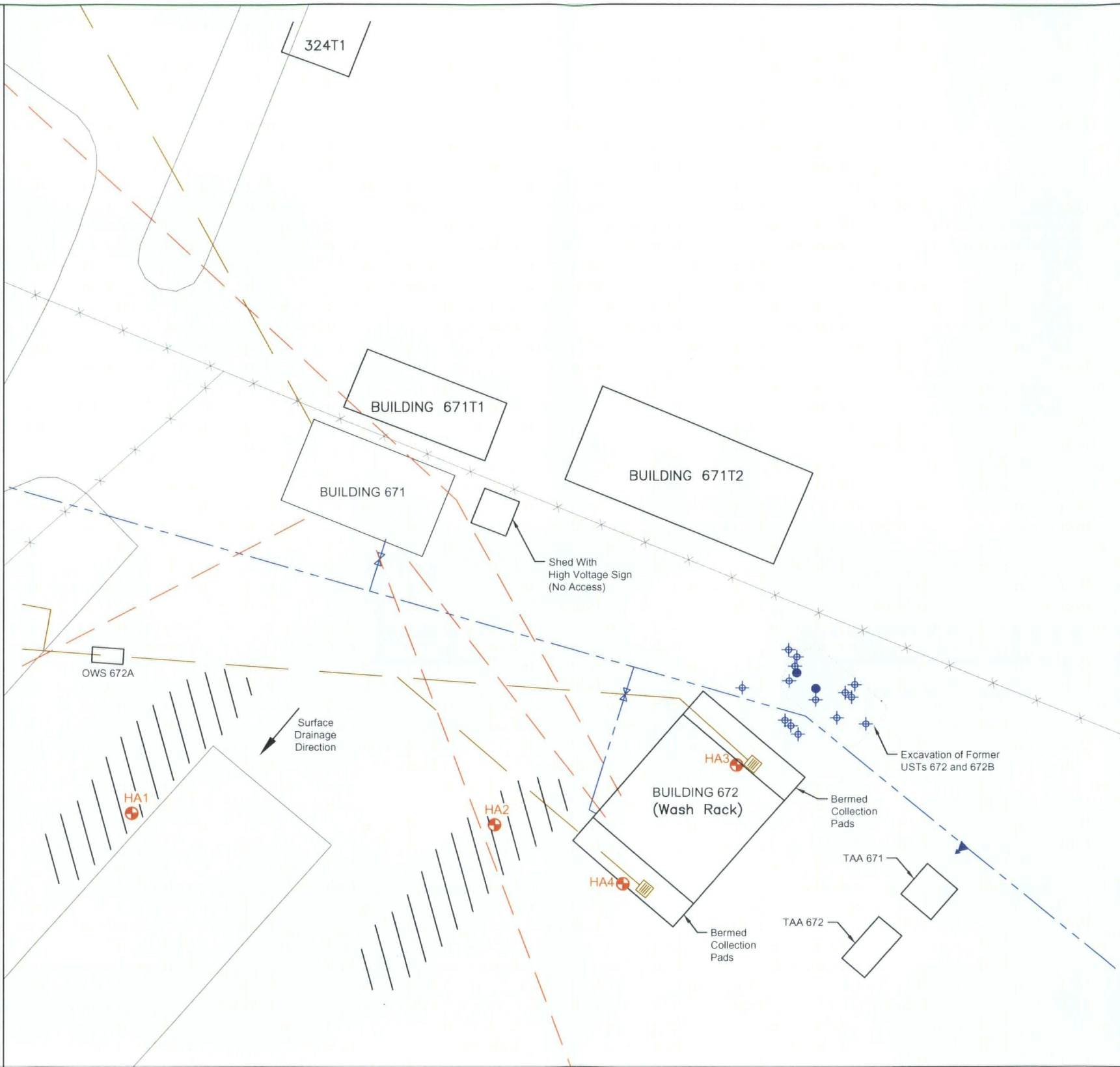
Exterior of Building 671
(Facing Northeast)



Discharge Point to Storm Sewer for Drainage
of Parking Area at Southwest Corner of Site
(Facing Northeast)

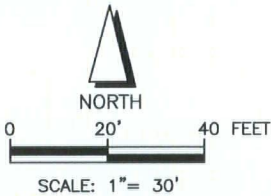


Damaged Asphalt in Parking Area with
Buildings 671T2 and 672 in the Background
(Facing Northeast)



- LEGEND:**
- Sanitary Sewer
 - Water Line
 - Electrical Line
 - HA3 2004 Soil Sample Location
 - Damaged Asphalt
 - ows Oil and Water Separator
 - Catch Basin
 - Water Valve
 - Approximate Soil Sample Locations (NFEC SW SDIEGO, 1993)(Sample Depths: 5 - 25 ft bgs; Analytes: TPH, VOCs)
 - Approximate Soil Sample Locations (OHM, 1998) (Sample Depths: 5 - 80 ft bgs; Analytes: TPH, VOCs, BTEX)
 - Approximate Soil Sample Locations (NFEC SW SDIEGO, 1993) (Sample Depths: 5 - 60 ft bgs; Analytes: TPH, VOCs)

- REFERENCES:**
- OHM Remediation Services Corp. 1998. Tank Removal and Site Closure Report, Underground Storage Tanks 672 and 672B, Marine Corps Air Station El Toro, CA. March.
 - Southwest Division, Naval Facilities Engineering Command (NFEC SW SDIEGO). 1993. *Marine Corps Air Station El Toro, California, Installation Restoration Program, Final Resource Conservation Recovery Act (RCRA), Facility Assessment Report*. San Diego, CA. 16 July.
 - NFEC SW SDIEGO. 2002. Summary Report, Former Temporary Accumulation Area (TAA) 672, Solid Waste Management Unit (SWMU) 177, Former Marine Corps Air Station El Toro, CA. March.



Note: Features and Interior Layout are Approximate and May Not be to Scale

Summary Report		
Site Plan		
PRL 671 & 672		
Environmental Baseline Survey		
Date: 02-05	Former MCAS El Toro	Figure 2
Project No. 54506	EarthTech A Tyco International Ltd. Company	

February 2005

Summary Report for PRL 671/672
Former MCAS El Toro

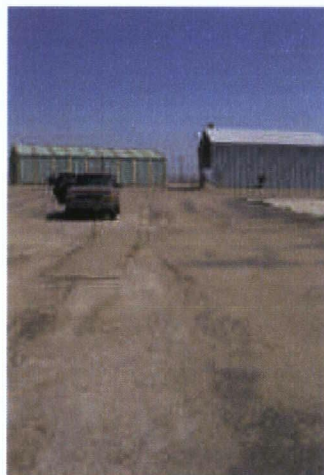
Appendix A
Sampling Design Specification Sheet – PRL 671/672



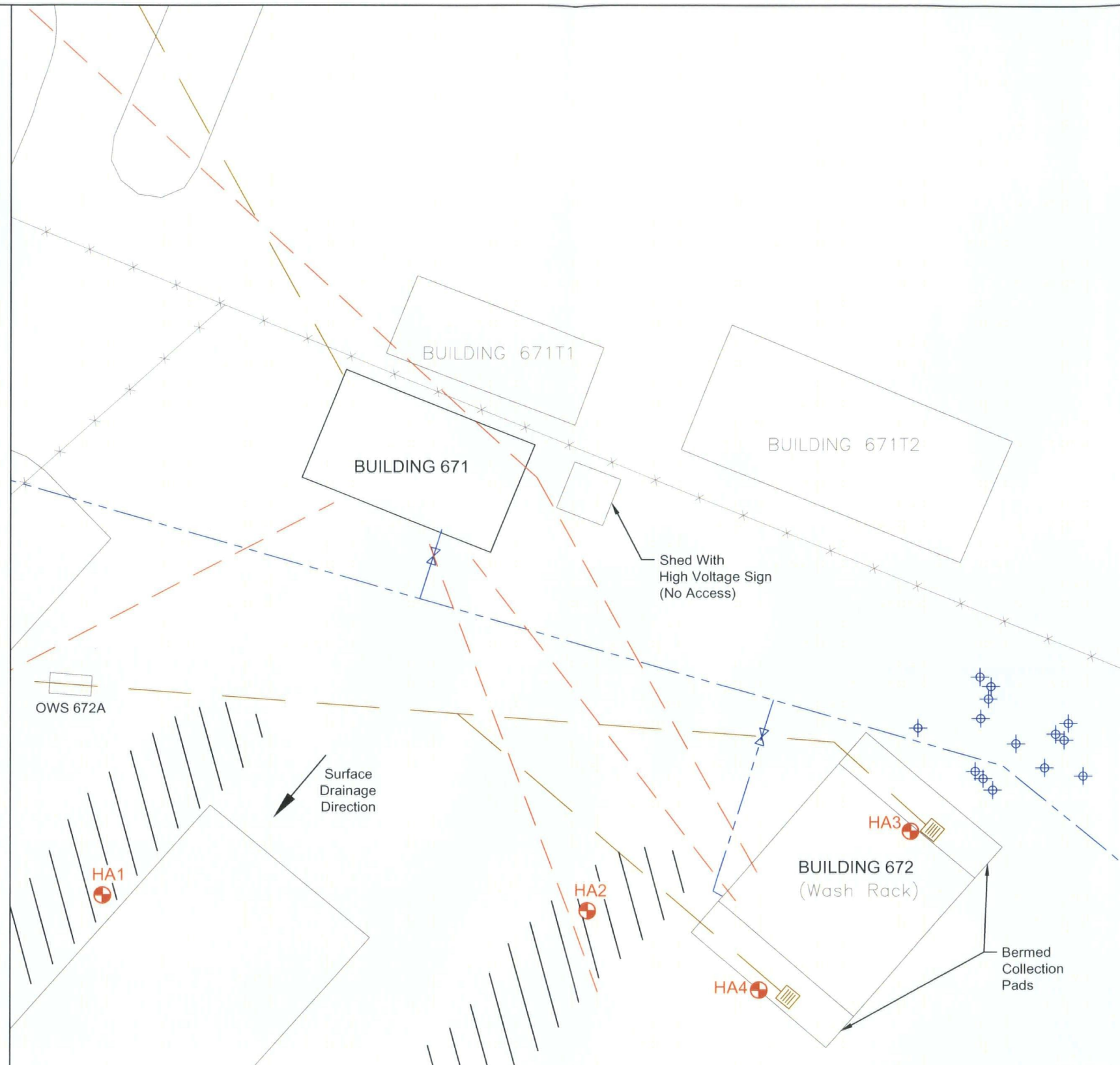
Exterior of Building 671
(Facing Northeast)



Discharge Point to Storm Sewer for Drainage
of Parking Area at Southwest Corner of Site
(Facing Northeast)



Damaged Asphalt in Parking Area with
Buildings 671T2 and 672 in the Background
(Facing Northeast)



Background

Building 671 was listed as Administrative in the 1973 station list. The facility description was Refueler Administration and Refueling Vehicle Parking Area in the 1997 list and that is the last known description. Building 672 was listed as Refueling Vehicle Shop in the 1973 list. The facility description was Refueling Vehicle Maintenance Shop in the 1997 list and that is the last known description. Two locations of concern are associated with Building 671. TAA 671 was a less than 90-day accumulation point for which sampling results were below residential PRGs. NFA has been recommended and regulatory agency concurrence is pending. PCB T90 was a transformer that was replaced. The 1994 field survey for PCB-transformer evaluation indicated no evidence of release. Five locations of concern are associated with Building 672. APHO 112 was identified on a 1975 photograph. DTSC has concurred with NFA in a letter dated 6/25/2003. TAA 672 was a less than 90-day accumulation point for which sampling results were below residential PRGs. NFA has been recommended and regulatory agency concurrence is pending. OWS 672A was a 400-gallon oil/water separator that has been removed. RWQCB concurred with NFA in a letter dated 1/10/2003. UST 672 was a 500-gallon waste JP-5 tank that was removed in 1997. RWQCB concurred with NFA in a letter dated 4/2/1999. UST 672B was a 1,000-gallon waste oil tank that was removed in 1997. RWQCB concurred with NFA in a letter dated 4/2/1999. Previous sampling was conducted to investigate LOCs USTs 672, 672B, and TAA672/SWMU177. However, these investigations do not coincide with or affect the proposed investigation.

Issues/Concerns

1. Damaged asphalt in refueling vehicle, parking area, possibly due to waste discharges, was observed during the 2002 VSI conducted in support of the EBS. Drainage of the parking area is to the southwest with subsequent discharge to a storm drain situated at the intersection of R Street and South Marine Way. Further evaluation is recommended to assess whether releases of waste have occurred to the environment as a result of past operations at this facility.
2. Building 672 is a vehicle wash rack that has not been evaluated for potential releases to the environment. Two catch basins located to the north and south of the wash rack collected wastewater for transfer to the OWS. Oils and solvents from washing activities may have migrated through cracks in the concrete of the sumps.

Investigation Design

1. Collection of two soil samples is proposed at locations HA1 and HA2. The samples are to be collected 1 foot below ground surface by hand auger and analyzed for VOCs, TPH_e, and TPH_v.
2. Collection of two soil samples is proposed at locations HA3 and HA4 adjacent to the catch basins. The samples are to be collected at 1 foot below the bottom of the catch basins by hand auger and analyzed for VOCs, TPH_e, and TPH_v.

References

1. OHM Remediation Services Corp. 1998. Tank Removal and Site Closure Report, Underground Storage Tanks 672 and 672B, Marine Corps Air Station El Toro, CA. March.
2. NFECSW SDIEGO. 2002. Summary Report, Fomer Temporary Accumulation Area (TAA) 672, Solid Waste Management Unit (SWMU) 177, Former Marine Corps Air Station El Toro, CA. March.

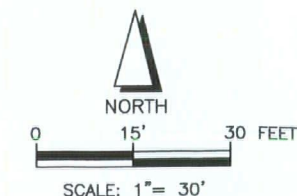
LEGEND:

— Sanitary Sewer
--- Water Line
--- Electrical Line
--- Existing Infrastructure
X Water Valve

HA3 Proposed Soil Sample Location
// Damaged Asphalt
OWS Oil and Water Separator
Catch Basin

Approximate 1998 Soil Sample Location

Note: Locations of Features and Interior Layout are Approximate



Preliminary Assessment

Final

Proposed Sampling Locations PRL 671/672

Environmental Baseline Survey

Date: 01-05

Former MCAS El Toro

Project No.

54506

EarthTech
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February 2005

Summary Report for PRL 671/672
Former MCAS El Toro

Appendix B
Validated Laboratory Analytical Data Report

			Sample ID:	LJ310	LJ311	LJ312	LJ313
			Location ID:	PRL671/672-HA03	PRL671/672-HA04	PRL671/672-HA02	PRL671/672-HA01
			Sample Type:	SS	SS	SS	SS
			Sample Depth (ft bgs):	3.5	3.0	1.0	1.0
			Sample Date:	13-Oct-04	13-Oct-04	13-Oct-04	13-Oct-04
Parameter	Units	Analytical Method ¹					
Volatile Organic Compounds							
1,1,1,2-Tetrachloroethane	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
1,1,1-Trichloroethane	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
1,1,2,2-Tetrachloroethane	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
1,1,2-Trichloroethane	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
1,1-Dichloroethane	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
1,1-Dichloroethene	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
1,2-Dichloroethane	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
1,2-Dichloropropane	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
1,2-Dichlorotetrafluoroethane	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
2-Butanone	µg/kg	8260B	110 U	110 U	120 U	110 U	
2-Hexanone	µg/kg	8260B	56 U	55 U	58 U	53 U	
4-Methyl-2-Pentanone	µg/kg	8260B	56 U	55 U	58 U	53 U	
Acetone	µg/kg	8260B	110 U	6 J	120 U	110 U	
Benzene	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
Bromodichloromethane	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
Bromoform	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
Bromomethane	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
Carbon Disulfide	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
Carbon Tetrachloride	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
Chlorobenzene	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
Chlorodibromomethane	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
Chloroethane	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
Chloroform	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
Chloromethane	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
cis-1,2-Dichloroethene	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
cis-1,3-Dichloropropene	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	

			Sample ID:	LJ310	LJ311	LJ312	LJ313
			Location ID:	PRL671/672-HA03	PRL671/672-HA04	PRL671/672-HA02	PRL671/672-HA01
			Sample Type:	SS	SS	SS	SS
			Sample Depth (ft bgs):	3.5	3.0	1.0	1.0
			Sample Date:	13-Oct-04	13-Oct-04	13-Oct-04	13-Oct-04
Parameter	Units	Analytical Method ¹					
Dichlorodifluoromethane (F12)	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
Diisopropyl Ether	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
Ethylbenzene	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
Ethyl-tert-butyl ether (ETBE)	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
Methyl tert-butyl ether	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
Methylene Chloride	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
Styrene	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
tert-Amyl methyl ether (TAME)	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
tertiary-Butyl alcohol (TBA)	µg/kg	8260B	22 U	22 U	23 U	21 U	
Tetrachloroethene	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
Toluene	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
Total xylenes	µg/kg	8260B	17 U	16 U	17 U	16 U	
trans-1,2-Dichloroethene	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
trans-1,3-Dichloropropene	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
Trichloroethene	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
Trichlorofluoromethane	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
Vinyl chloride	µg/kg	8260B	5.6 U	5.5 U	5.8 U	5.3 U	
Others							
Moisture	%	ASTM D 2216	13.6	15.6	14.9	11.1	
Petroleum Hydrocarbons							
PHC as Diesel Fuel	mg/kg	8015B DRO	10 J	200	12 U	11 U	
TPH as Gasoline	mg/kg	8015B GRO	9.7 U	0.02 J	9.9 U	8.9 U	
TPH as Motor Oil	mg/kg	8015B DRO	8 J	10 J	1 J	11 U	

Notes:

¹ = Environmental Protection Agency Method unless otherwise noted.

U = Indicates the compound or analyte was analyzed for but was not detected at or above the stated limit.

J = Indicates an estimated value

SS = Soil Sample

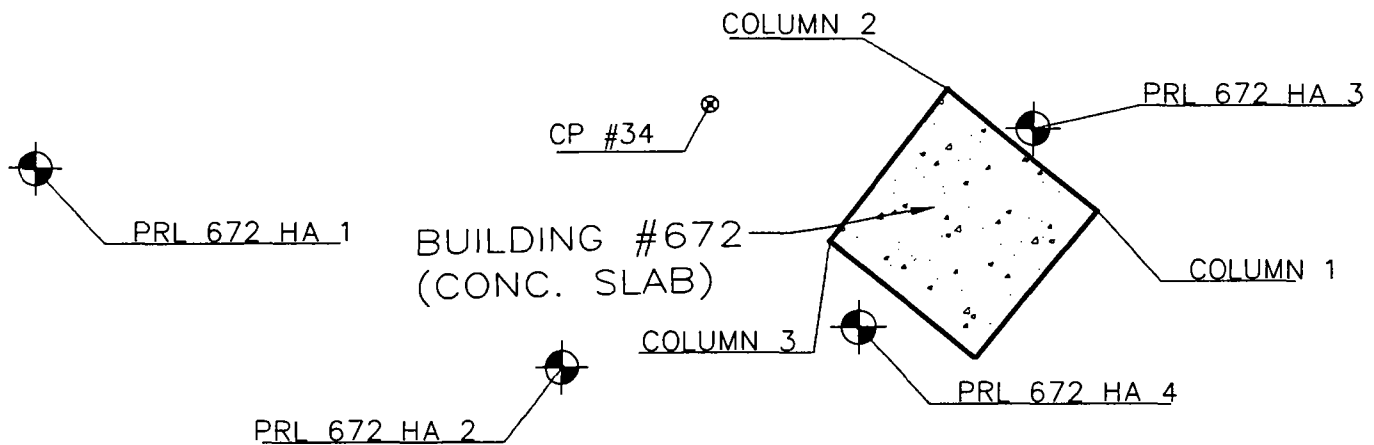
ASTM = American Society of Testing and Materials

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Former MCAS El Toro

Appendix C

Land Surveying Data



PRL AND NOTABLE FEATURES LOCATIONS			
STATION	NORTHING	EASTING	ELEVATION
COLUMN 1	2187374.71	6110439.56	
COLUMN 2	2187400.14	6110408.39	
COLUMN 3	2187368.40	6110384.71	
CP #34	2187396.83	6110360.14	282.41
PRL 672 HA 1	2187383.93	6110220.71	278.79
PRL 672 HA 2	2187342.34	6110329.35	280.67
PRL 672 HA 3	2187391.91	6110426.36	283.32
PRL 672 HA 4	2187350.50	6110390.59	282.62



DCA CIVIL
ENGINEERING
GROUP

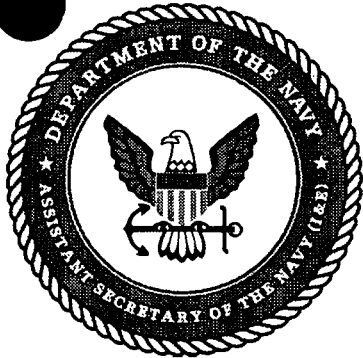
17625 Crenshaw Blvd., Ste. 300
Torrance, California 90504
Tel: (310) 327-0018
Fax: (310) 327-0175
www.dcacivileng.com

POTENTIAL RELEASE LOCATION SKETCH

SCALE: 1" = 40' DATE: 02-16-05

BY: JCL JOB NO.: 04-1058-2227.000-535

**Attachment 9
Summary Report
PRL 673**



**Summary Report for PRL 673, Environmental
Baseline Survey
Former Marine Corps Air Station,
El Toro, California**

February 2005

Prepared for:
**Base Realignment and Closure
Program Management Office West
1230 Columbia Street, Suite 1100
San Diego, CA 92101**

Prepared by:
**Earth Tech, Inc.
841 Bishop Street, Suite 500
Honolulu, HI 96813-3920**

Prepared under:
**Comprehensive Long-Term Environmental Action Navy
Contract Number N62742-94-D-0048, CTO 0104**

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2. SAMPLING AND ANALYSIS SUMMARY	2
3. INVESTIGATION RESULTS	2
3.1 Analytical Results and Quality Assurance	2
3.2 Result Evaluation and Risk Screening	2
4. CONCLUSIONS AND RECOMMENDATIONS	3
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ACRONYMS AND ABBREVIATIONS

APHO	aerial photograph anomaly
bgs	below ground surface
BNI	Bechtel National Inc.
DTSC	Department of Toxic Substances Control
EBS	environmental baseline survey
EPA	Environmental Protection Agency
HI	hazard index
LOC	location of concern
MCAS	Marine Corps Air Station
mg/kg	milligrams per kilogram
NFA	no further action
NFECSSW SDIEGO	Naval Facilities Engineering Command, Southwest
OWS	oil/water separator
pH	negative logarithm of hydrogen ion concentration
PRG	preliminary remediation goal
PRL	potential release location
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RWQCB	Regional Water Quality Control Board (Santa Ana Region)
TPH	total petroleum hydrocarbons
VSI	visual site inspection

1. BACKGROUND

Potential Release Location (PRL) 673 is associated with Building 673, located in the southeast quadrant of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). This building was listed as "Aircraft Ground Support Equipment Shop" in the 1973 and 1997 station building lists, which is also the last known description of the building. Figure 2 shows the plan of Building 673 and the surrounding area.

Ten locations of concern (LOCs) were associated with this site. Oil/water separator (OWS) 673A was investigated and recommended for no further action (NFA) by the Resource Conservation and Recovery Act (RCRA) Facilities Assessment (RFA) based on the results of soil sampling; it was later closed by the Regional Water Quality Control Board (RWQCB) as stated in a letter dated 17 January 2001. Aerial photograph anomaly (APHO) 51 consists of stains and wet soil, for which no evidence of staining or a release was identified during the 2002 visual site inspection (VSI), which was conducted in support of the environmental baseline survey (EBS). California Department of Toxic Substances Control (DTSC) and RWQCB concurred with the NFA recommendation for APHO 51 as stated in letters dated 14 June 2000 and 18 October 2000, respectively. Building 673-T3 was a RCRA storage facility, for which NFA concurrence was obtained from DTSC as stated in a letter dated 8 March 1996. RFA 178 was a vehicle wash rack, for which NFA concurrence was obtained from DTSC as stated in a letter dated 23 July 1996. RFA 181 was a land farming area, for which NFA concurrence was obtained from DTSC as stated in a letter dated 23 July 1996. RFA 182, 183, and 184 were drum storage areas, for which NFA concurrence was obtained from DTSC as stated in a letter dated 23 July 1996. RFA 185 was a drum storage area, where stained drums were identified during additional evaluation following the RFA conducted in 2002. Based on DTSC review, further evaluation of RFA 185 was recommended. The temporary accumulation area (TAA) 673 was a less-than-90-day area, for which NFA has been recommended but agency concurrence has not yet been obtained.

1.1 ISSUES AND CONCERNS

The following issues and concerns associated with this PRL were identified through the records search and VSIs conducted in 2002 and 2004:

- A room with a fume hood in the southwest corner of Building 673 appears to be the former battery shop. The concrete floor leading to and surrounding the central floor drain is damaged, indicating a potential release of wastes. The acid neutralization tank was not identified during the VSI. A release from the battery shop was reported, and a cast iron sewer was damaged by battery acid and then replaced. Further investigation was recommended.
- Reported activities undertaken, and equipment and substances used at the facility, including welding, engine maintenance, battery repair, a parts dip tank, hydraulic lifts, abrasive blast, and Vacublast units, may have resulted in releases of wastes to the ground or sewer. With respect to welding, engine maintenance, parts dip tank, abrasive blast and Vacublast operations, no evidence of releases were identified during the VSIs and no potential routes for releases to the environment, such as floor drains or damaged floor, were observed. The areas surrounding the hydraulic lifts were in good condition, with no signs of oil leaks or releases. However, further evaluation was recommended to determine whether any subsurface leaks have occurred.

Previous sampling was conducted to investigate LOC OWS673A. The sampling locations and analyte lists are presented in Figure 2; however, they do not coincide with the current issues and concerns.

A sampling program was proposed to further investigate the issues identified and assess whether hazardous substances or pollutants have released to the environment. Chemicals of concern associated with battery shops include acids and the heavy metals cadmium, lead, and nickel that make up components in batteries. The chemicals of concern associated with hydraulic lifts consist of petroleum hydrocarbons found in hydraulic fluid. A summary of soil sampling activities is presented in Section 2, and the results are presented in Section 3.

2. SAMPLING AND ANALYSIS SUMMARY

Sampling was conducted for evaluation of PRL 673 in October 2004. The sample locations are shown in Figure 2, and a summary of sampling and analyses is provided in Table 1. The specification sheet, which includes the rationale for the sampling design, is presented in Appendix A of this summary report.

Three soil samples were collected from locations HA1, HA2, and HA3 at PRL 673. The sample at HA1 was collected near the central floor drain in the battery shop. The sample was collected 3 feet below ground surface (bgs) using a hand auger and analyzed for pH, and metals (lead, cadmium, and nickel). The sample at HA2 was collected adjacent to the south hydraulic lift, beneath the oil supply pipeline. The sample was collected 2 feet bgs using a hand auger and analyzed for total petroleum hydrocarbons (TPH). The sample at HA3 was collected beneath the sanitary sewer line to the west of Building 673. The sample was collected 3 feet bgs using a hand auger, and analyzed for TPH and metals (lead, cadmium, and nickel). This sample was used to assess whether any releases to the environment occurred due to cracks in the sanitary sewers in the vicinity of the building. The results for TPH were reported as TPH as gasoline (TPH_g), TPH as diesel (TPH_d), and TPH as motor oils (TPH_m).

3. INVESTIGATION RESULTS

3.1 ANALYTICAL RESULTS AND QUALITY ASSURANCE

The analytical results for the samples collected at PRL 673, along with the United States Environmental Protection Agency (EPA) Region 9 or California-Modified residential preliminary remediation goals (PRGs), are presented in Table 2 (EPA Region 9 2004). Appendix B presents the validated laboratory analytical data and Appendix C presents the land surveying data.

Some results were qualified as estimated or non-detect in the data validation process. These qualifications do not affect the findings or conclusions of this report.

3.2 RESULT EVALUATION AND RISK SCREENING

The TPH detections from samples collected at HA2 and HA3 consist of diesel- and oil-related hydrocarbons. The detections are assessed to be representative of the maximum concentration in soil as the samples were collected adjacent to the sources of release (i.e., hydraulic lift supply line and sewer line). Other sources of petroleum hydrocarbons in the vicinity of the sample locations were the vehicle wash rack (RFA 178) and OWS 673A that have since been closed by regulatory agencies. Therefore, the concentrations of petroleum hydrocarbons in the soil samples do not indicate that there has been a significant release to the soil via the hydraulic lift supply line or sewer line.

The pH value of sample HA1 indicates that the soil is slightly basic in nature and no release of acid has taken place in the vicinity of the sampling location.

The detected metals (lead, cadmium, and nickel) concentrations were less than the corresponding MCAS El Toro background values (BNI 1996) and PRGs.

Risk screening was performed to evaluate risks associated with potential exposures to chemicals of potential concern (detected analytes) in the soil at PRL 673. The methodology for risk screening is presented in Section 3.2 of the Summary Report, and results are presented in Table 3.

The cumulative maximum carcinogenic risk due to potential exposure to maximum detected concentrations of cadmium at PRL 673 is $1.0\text{E-}09$, which is below the EPA point of departure risk level of $1.0\text{E-}06$. The cumulative maximum noncancer hazard associated with potential exposure to maximum detected concentrations of cadmium, lead, and nickel is expressed as a hazard index (HI) of 0.068, which is below the target HI of 1.

4. CONCLUSIONS AND RECOMMENDATIONS

The primary objective of investigations conducted at PRL 673 was to assess whether hazardous substances or pollutants were released to the environment due to the issues and concerns identified. A review of available records, VSIs, and soil sampling indicate that no significant release of hazardous substances or pollutants has occurred at PRL 673. This conclusion is supported by the observation that detected concentrations of all chemicals of concern were less than their respective residential PRGs or are not indicative of a significant release that would endanger human health or the environment. The cancer risk at PRL 673 is less than the EPA point of departure value of $1.0\text{E-}06$. Additionally, the noncancer risk at this PRL is less than the target HI of 1. Based on these findings, no further investigation is recommended for PRL 673.

5. REFERENCES

Bechtel National, Inc. (BNI). 1996. *Final Technical Memorandum, Background and Reference Levels, Remedial Investigations, Marine Corps Air Station El Toro, California*. San Diego, California: NAVFAC EFD SOUTHWEST.

Environmental Protection Agency, United States (EPA). 2004. *SW-846 On-Line, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*.
<http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm>. Office of Solid Waste.

Environmental Protection Agency, United States, Region 9 (EPA Region 9). 2004. *EPA Region 9 PRGs [Preliminary Remediation Goals] Tables*. San Francisco, California. October.

Property Record of December 1976.

Drawing: Repairs to Mechanical, Plumbing and HVAC Systems for Various Buildings, MCAS, El Toro, Bldg 673 Site Plan and Details. 29 June 1990.

Drawing: CAS El Toro, Ground Support Equipment Facility, Floor Plan. 7 November 1972.

Drawing: MCAS El Toro, Ground Support Equipment Facility, Plumbing Floor Plan, Sheet 19 of 30. 7 November 1972.

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Drawing: Repairs to Buildings 390, 370, and 317, Floor Plan Building 390. NAFAC DWG No: 6254228. 9 July 1990.

NFECSW SDIEGO. 1999. Site Assessment Report, Oil/Water Separator, Site 673A, Marine Corps Air Station El Toro, CA. April.

Tables

Table 1: Sampling and Analyses Summary – PRL 673

Sample Location	EPA ID	Sample Depth (bgs)	Sampling Technique	Analyses				
				Analytical Method ^a				
				Cadmium 6010B	Lead 6010B	Nickel 6010B	pH 9045C	TPH ^b 8015B
HA1	LJ331	3 feet	Hand Auger	X	X	X	X	--
HA2	LJ332	2 feet	Hand Auger	--	--	--	--	X
HA3	LJ330	3 feet	Hand Auger	X	X	X	--	X

Notes:

^a Analysis was in general accordance with the listed methods provided in EPA Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

^b Analytical results for TPH were reported as total petroleum hydrocarbons as gasoline (TPH_g), total petroleum hydrocarbons as diesel (TPH_d), and total petroleum hydrocarbons as motor oils (TPH_m).

X = analysis was performed for the specified analyte

-- = analysis was not performed for the specified analyte.

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Summary Report for PRL 673
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Table 2. Analytical Results Summary - PRL 673

Analyte	MCAS El Toro Background Concentrations (95th Quantile) ^a	Residential Soil PRG ^b	Sample Location	PRL 673-HA1	PRL 673-HA2	PRL 673-HA3
			Sample Depth	3 feet bgs	2 feet bgs	3 feet bgs
			Sample Name	LJ331	LJ332	LJ330
Total Petroleum Hydrocarbons (mg/kg)						
TPH as Gasoline	--	--		NA	8.9 U	8.8 U
TPH as Diesel	--	--		NA	4	46
TPH as Motor Oil	--	--		NA	19	160
Metals (mg/kg)						
Cadmium	2.35	3.7E+01		0.18	NA	1.4
Lead ^c	15.1	1.5E+02		0.85	NA	3.8
Nickel	15.3	1.6E+03		1.5	NA	8.2
General Chemistry						
pH	--	--		7.87	NA	NA

Notes

-- = Value does not exist

NA = not analyzed

U = Indicates the compound or analyte was analyzed for but was not detected at or above the stated limit.

^a = Source: BNI, 1996

^b = Analytical results were compared to EPA Region 9 PRGs (2004), with the exception of lead (see note c)

^c = Analytical results for lead were compared to Cal-Modified PRG (2004) since it is significantly more protective than corresponding EPA Region 9 PRGs.

Table 3: Risk Screening Results - PRL 673

Chemical of Potential Concern	MCAS El Toro Background Concentrations (95th Quantile) ^a	Maximum EPC ^b (mg/kg)	Carcinogenic PRG ^c (mg/kg)	Noncarcinogenic PRG ^c (mg/kg)	Risk Corresponding to Maximum EPC			
					Carcinogenic		Noncarcinogenic	
					Excess Cancer Risk ^d	Percent Contribution to Cancer Risk ^e	HI ^f	Percent Contribution to Noncancer Risk ^g
Metals								
Cadmium		1.4	1.4E+03	3.7E+01	1.0E-09	100%	3.8E-02	55%
Lead ^h		3.8		1.5E+02			2.5E-02	37%
Nickel		8.2	--	1.6E+03	--	--	5.2E-03	8%
Cumulative Maximum Risk					1.0E-09		6.8E-02	

Notes:^a = Source: BNI, 1996^b EPC = exposure point concentration^c US EPA Region 9 PRGs (2004).^d Excess cancer risk = 1E-06 x (Maximum EPC/Carcinogenic PRG)^e With respect to cumulative excess cancer risk or hazard index (including metals with background)^f HI = Maximum EPC / Noncarcinogenic PRG^g Cal-Modified Carcinogenic PRG (2004) was used for lead for excess cancer risk calculation since it is significantly more protective than corresponding EPA Region 9 PRG.

Figures





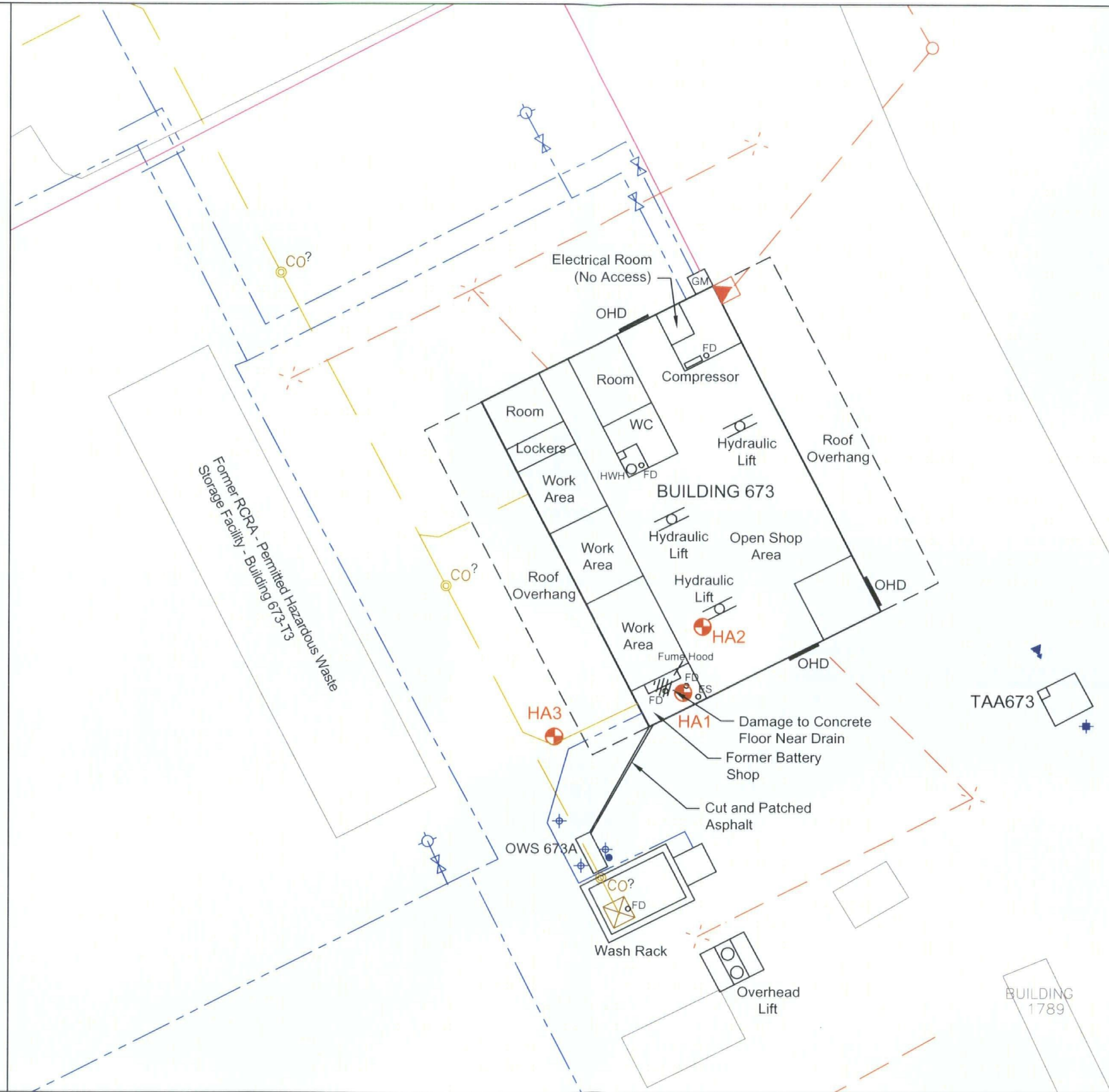
Central Floor Drain in Former Battery Shop with Surrounding Etched Concrete



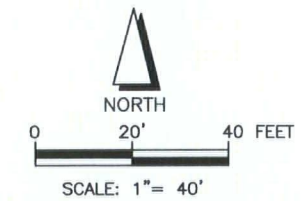
Open Shop Area with Hydraulic Lift in the Foreground (Facing North)



Wash Rack and Former OWS in Foreground (Facing Southeast)



- LEGEND:**
- Sanitary Sewer
 - Water Line
 - Natural Gas Line
 - Electrical Line
 - HA3 2004 Soil Sample Location
 - CO Clean Out
 - ? Feature Not Identified in the Field
 - Transformer
 - Fire Hydrant
 - Water Valve
 - Lamp Post
 - SS Service Sink
 - FD Floor Drain
 - HWH Hot Water Heater
 - ES Emergency Shower
 - GM Gas Meter
 - OWS Oil-Water Separator
 - OHD Overhead Door
- Approximate Boring Location (NFECSS SDIEGO 1993) (Sample Depths: 5 to 25 feet bgs; Analytes: TPH, VOC)
 - Approximate Boring Location (NFECSS SDIEGO 1993) (Sample Depths: 2 to 5 feet bgs; Analytes: TPH, VOC, SVOC, Pesticides, PCB, Metals)
 - Approximate Angle Boring Location (NFECSS SDIEGO 1993) (Sample Depths: 10 to 60 feet bgs; Analytes: TPH, VOC, SVOC, Pesticides, PCB, Metals)
 - Approximate soil sample location (NFECSS SDIEGO 1999) (Sample Depths: 10.5 - 45feet bgs; Analytes: TPH, VOC)



Note: Features and Interior Layout are Approximate and May Not be to Scale

- REFERENCES:**
- Southwest Division, Naval Facilities Engineering Command (NFECSS SDIEGO). 1993. *Marine Corps Air Station El Toro, California, Installation Restoration Program, Final Resource Conservation Recovery Act (RCRA), Facility Assessment Report*. San Diego. 16 July.
 - NFECSS SDIEGO. 1999. *Site Assessment Report, Oil/Water Separator, Site 673A, Marine Corps Air Station El Toro, CA*, April.

Summary Report		
Site Plan PRL 673		
Environmental Baseline Survey		
Date: 02-05	Former MCAS El Toro	Figure 2
Project No. 54506	EarthTech A Tyco International Ltd. Company	

February 2005

Summary Report for PRL 673
Former MCAS El Toro

Appendix A
Sampling Design Specification Sheet – PRL 673

File: C:\Documents and Settings\Jeffrey.waughen\My Documents\cad_dwg\Working\Deniss\Group 1\Final\104_ss_prf673_Final_dp1.dwg Time: Jan 20, 2005 -- 3:20pm



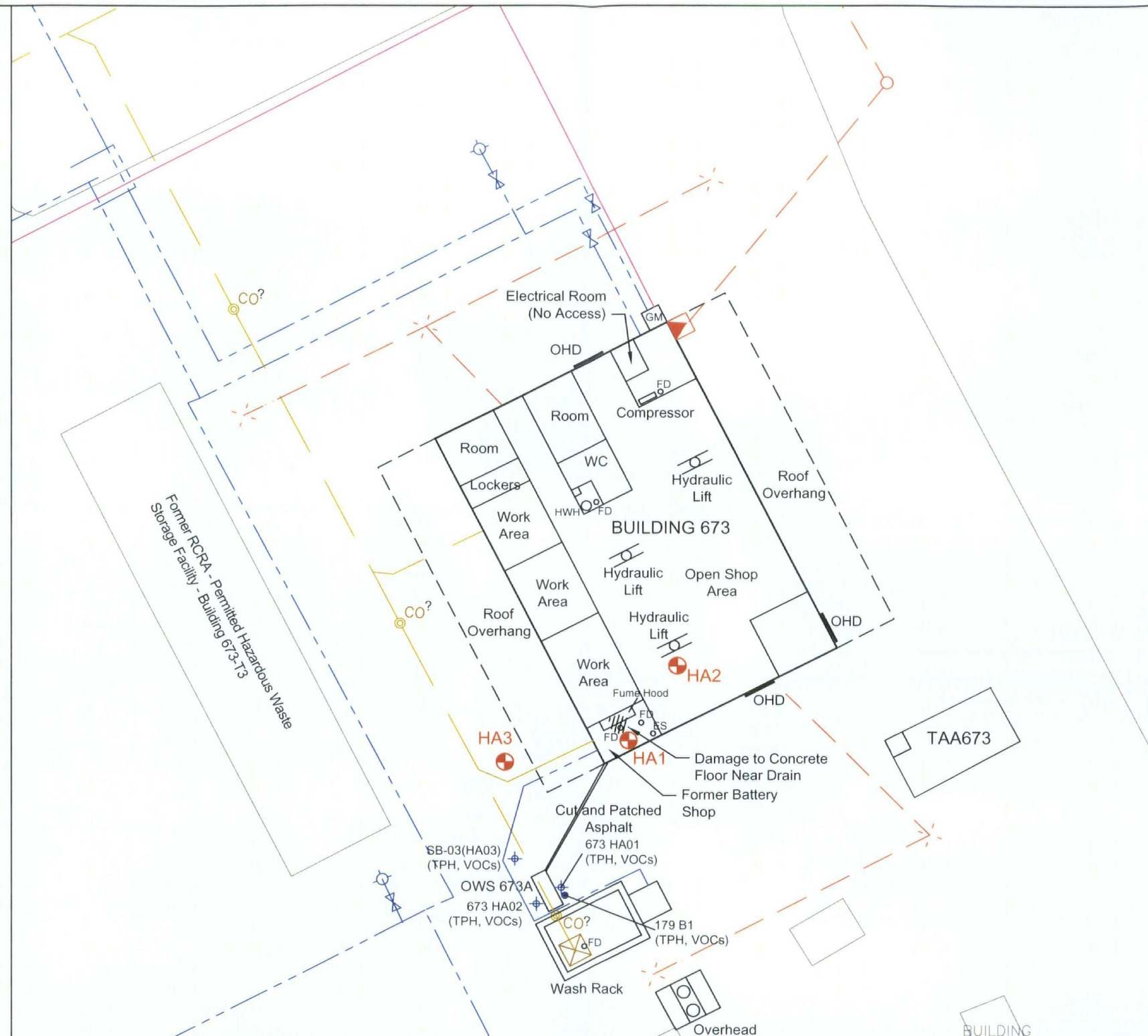
Central Floor Drain in Former Battery Shop with Surrounding Etched Concrete



Open Shop Area with Hydraulic Lift in the Foreground (Facing North)



Wash Rack and Former OWS in Foreground (Facing Southeast)



LEGEND:

- Sanitary Sewer
- Water Line
- Natural Gas Line
- Electrical Line
- Existing Infrastructure

HA3



Proposed Soil Sample Location



Clean Out



Feature Not Identified in the Field



Approximate 1999 Soil Boring Location
(The parameters in parentheses indicate chemicals analyzed)



Approximate RFA Boring Location
(The parameters in parentheses indicate chemicals analyzed)



Transformer



Fire Hydrant



Water Valve



Lamp Post

SS

Service Sink

FD

Floor Drain

HWH

Hot Water Heater

ES

Emergency Shower

GM

Gas Meter

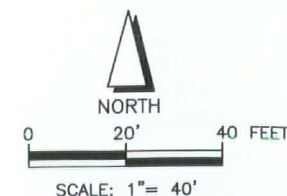
OWS

Oil-Water Separator

OHD

Overhead Door

Note: Locations of Features and Interior Layout are Approximate



Background

This building was listed as Aircraft Ground Support Equipment Shop in the 1973 and 1997 station building lists. This is also the last known description of the building. Ten locations of concern were associated with this site. OWS 673A was investigated and recommended for no further action (NFA) by the RCRA Facilities Assessment (RFA) based on the results of soil sampling and later closed by the RWQCB in a letter dated 17 January 2001. APHO 51 consists of stains and wet soil for which no evidence of staining or a release was identified during the 2002 VSI conducted in support of the EBS. DTSC and RWQCB concurred with NFA recommendation for APHO 51 in letters dated 14 June 2000 and 18 October 2000, respectively. Building 673-T3 was a RCRA storage facility for which NFA concurrence was obtained from DTSC in a letter dated 8 March 1996. RFA 178 was a vehicle wash rack for which no further action concurrence was obtained from DTSC in a letter dated 23 July 1996. RFA 181 was a land farming area for which no further action concurrence was obtained from DTSC in a letter dated 23 July 1996. RFA 182, 183, and 184 were drum storage areas for which no further action concurrence was obtained from DTSC in a letter dated 23 July 1996. RFA 185 was a drum storage area in which stained drums were identified during additional evaluation following the RFA conducted in 2002. Based on DTSC review, further evaluation of RFA 185 was recommended. TAA 673 was a less than 90-day temporary accumulation area for which NFA has been recommended and agency concurrence has not yet been obtained. Previous sampling was conducted to investigate LOC OWS673A. However, that investigation does not coincide with or affect the scope of the proposed investigation.

Issues/Concerns

- Room in southwest corner of building with fume hood appears to be the former battery shop. The concrete floor leading to and surrounding the central floor drain is damaged indicating a potential release of wastes. The acid neutralization tank was not identified during the VSI. A release from the battery shop was reported and a cast iron sewer was damaged by battery acid and replaced.
- Reported activities undertaken, and equipment and substances used at the facility, including welding, engine maintenance, battery repair, a parts dip tank, hydraulic lifts, abrasive blast and vacublast units may have resulted in releases of wastes to the ground or sewer. The areas surrounding the hydraulic lifts were in good condition with no signs of oil leaks or releases. However, further evaluation is required to determine if any subsurface leaks have occurred.

Investigation Design

- Collection of one soil sample is proposed at location HA1 near the central floor drain in the battery shop. The sample will be collected 1 foot below the sewer invert by hand auger and analyzed for pH, and metals (lead, cadmium, and nickel).
- Collection of one soil sample is proposed at location HA2, adjacent to the south lifts, near the oil supply line. The sample will be collected 2 feet below ground surface by hand auger and analyzed for TPH_e and TPH_v.
- Collection of one soil samples is proposed at location HA3 near the sanitary sewer line outside the western wall of Building 673. The sample will be collected 1 foot below the sanitary sewer invert by hand auger and analyzed for TPH_e, TPH_v, and metals (lead, cadmium, and nickel). This sample will be used to assess if any releases to the environment occurred due to cracks in the sanitary sewers in the vicinity of the building.

References

- Property Record of December 1976.
- Drawing: Repairs to Mechanical, Plumbing and HVAC Systems for Various Buildings, MCAS, El Toro, Bldg 673 Site Plan and Details. 29 June 1990.
- Drawing: CAS El Toro, Ground Support Equipment Facility, Floor Plan. 7 November 1972.
- Drawing: MCAS El Toro, Ground Support Equipment Facility, Plumbing Floor Plan, Sheet 19 of 30. 7 November 1972.
- Drawing: Repairs to Buildings 390, 370, and 317, Floor Plan Building 390. NAFAC DWG No: 6254228. 9 July 1990.
- NFECWS SDIEGO. 1999. Site Assessment Report, Oil/Water Separator, Site 673A, Marine Corps Air Station El Toro, CA, April.

Preliminary Assessment

Final

Proposed Sampling Locations PRL 673

Environmental Baseline Survey

Date: 01-05	Former MCAS El Toro
Project No. 54506	 A Tyco International Ltd. Company

February 2005

Summary Report for PRL 673
Former MCAS El Toro

Appendix B
Validated Laboratory Analytical Data Report

Sample ID:			LJ330	LJ331	LJ332
Location ID:			PRL673-HA03	PRL673-HA01	PRL673-HA02
Sample Type:			SS	SS	SS
Sample Depth(ft bgs):			3.0	3.0	2.0
Sample Date:			15-Oct-04	15-Oct-04	15-Oct-04
Parameters	Units	Analytical Method ¹			
Metals:					
Cadmium	mg/kg	6010B	1.4	0.18	--
Lead	mg/kg	6010B	3.8	0.85	--
Nickel	mg/kg	6010B	8.2	1.5	--
Others:					
Moisture	%	ASTM D 2216	9.8	10.8	11.6
pH	pH	9040	--	7.87	--
Petroleum Hydrocarbons:					
PHC as Diesel Fuel	mg/kg	8015B DRO	46	--	4 J
THP as Gasoline	mg/kg	8015B GRO	8.8 U	--	8.9 U
THP as Motor Oil	mg/kg	8015B DRO	160	--	19

Notes:

¹ = Environmental Protection Agency Method unless otherwise noted.

U = Indicates the compound or analyte was analyzed for but was not detected at or above the stated limit.

J = Indicates an estimated value

UJ = Indicates the compound or analyte was analyzed for but was not detected. The sample detection limit is an estimated value.

-- = Not Analyzed

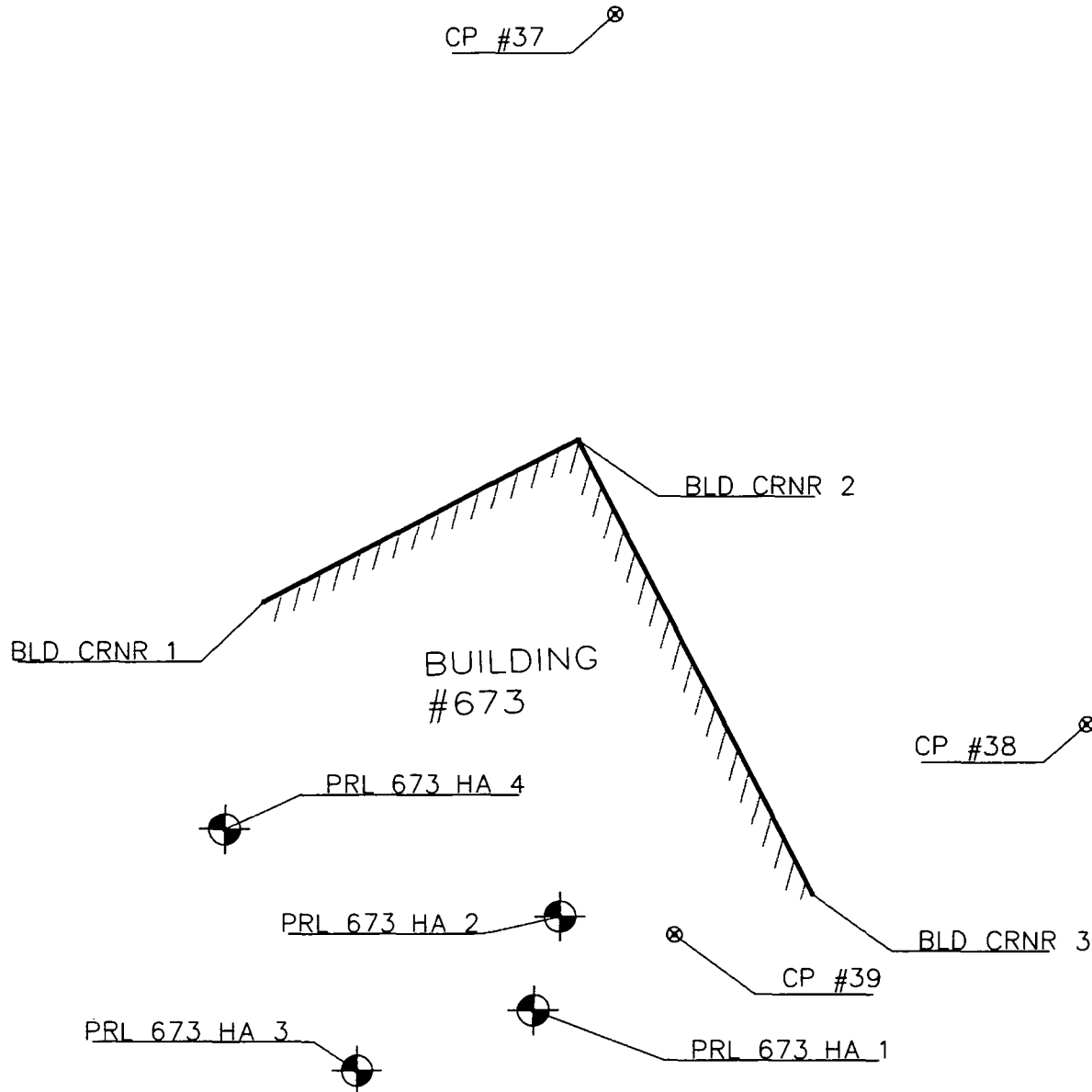
SS = Soil Sample

ASTM = American Society of Testing and Materials

February 2005

Summary Report for PRL 673
Former MCAS El Toro

Appendix C
Land Surveying Data



PRL AND NOTABLE FEATURES LOCATIONS			
STATION	NORTHING	EASTING	ELEVATION
BLD CRNR 1	2189165.64	6115651.43	
BLD CRNR 2	2189202.20	6115722.59	
BLD CRNR 3	2189099.37	6115775.34	
CP #37	2189298.24	6115730.38	388.46
CP #38	2189137.94	6115836.31	390.91
CP #39	2189090.18	6115744.59	390.07
PRL 673 HA 1	2189073.13	6115713.32	389.99
PRL 673 HA 2	2189094.35	6115719.07	390.12
PRL 673 HA 3	2189059.48	6115673.09	389.52
PRL 673 HA 4	2189114.25	6115643.05	389.17

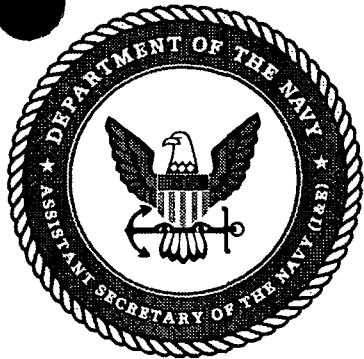
DCA CIVIL
ENGINEERING
GROUP

17625 Crenshaw Blvd., Ste. 300
Torrance, California 90504
Tel: (310) 327-0018
Fax: (310) 327-0175
www.dcacivileng.com

POTENTIAL RELEASE LOCATION SKETCH

SCALE: 1" = 40' DATE: 02-16-05
BY: JCL JOB NO.: 04-1058-2227.000-535

**Attachment 10
Summary Report
PRL 886/887**



Summary Report for PRL 886/887, Environmental Baseline Survey

**Former Marine Corps Air Station,
El Toro, California**

February 2005

Prepared for:
**Base Realignment and Closure
Program Management Office West
1230 Columbia Street, Suite 1100
San Diego, CA 92101**

Prepared by:
**Earth Tech, Inc.
841 Bishop Street, Suite 500
Honolulu, HI 96813-3920**

Prepared under:
**Comprehensive Long-Term Environmental Action Navy
Contract Number N62742-94-D-0048, CTO 0104**

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Figure 2: Site Plan – PRL 886/887	13

APPENDICES

A Sampling Design Specification Sheet – PRL 886/887	
---	--

ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, xylene
ECP	Environmental Condition of Property
IRP	Installation Restoration Program
MCAS	Marine Corps Air Station
µg/kg	micrograms per kilogram
NFECSW SDIEGO	Naval Facilities Engineering Command, Southwest
PRG	preliminary remediation goal
PRL	potential release location
TPH	total petroleum hydrocarbons
VOC	volatile organic compounds
VSI	visual site inspection

1. BACKGROUND

Potential Release Location (PRL) 886/887 is associated with buildings 886 and 887, located in the southwestern portion of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). The facilities were listed as "Aircraft Direct Fueling Stations" in the 1997 station list, which is the last known description. These facilities do not consist of actual structures, but were designated as buildings for listing and tracking purposes. The facilities are not currently operational and consist only of concrete slabs adjacent to the runways.

1.1 ISSUES AND CONCERNS

The following issues and concerns associated with this PRL were identified through the records search and visual site inspections (VSIs) conducted in 2002 and 2004:

- Historic activities at the site included dispensing of jet fuel (JP-5).

2. SITE ASSESSMENT

Fueling stations 886 and 887 are located within the former Installation Restoration Program (IRP) Site 19 (Aircraft Expeditionary Refueling [ACER] Site), Unit 1 (Northeast Stained Area). The area containing these fueling stations was investigated as a component of IRP Site 19 in 1992. A release was not discovered during this investigation.

The sites were designated as PRL 886/887 during the environmental baseline survey and were designated Environmental Condition of Property (ECP) Category 7. ECP Category 7 was assigned to areas that have not been evaluated or that require additional evaluation. Sampling at these sites was conducted on 9 August 2004 (NFECSW SDIEGO 2004). The sampling locations are shown in Figure 2. Soil borings SB13 and SB14 were advanced in the vicinity of Stations 886 and 887, respectively. Two soil samples were collected from each boring, one at 10 feet below ground surface (bgs) and the other at 20 feet bgs, and analyzed for total petroleum hydrocarbons (TPH as gasoline and JP-5) and volatile organic compounds (VOCs). Gasoline and JP-5 were not detected above their respective laboratory reporting limits in any sample. Additionally, benzene, toluene, ethylbenzene, and xylenes (BTEX), and fuel oxygenates were not detected in any of the samples. Acetone was detected at concentrations of 31 and 34 micrograms per kilogram ($\mu\text{g}/\text{kg}$) in the 10-foot sample collected from SB13 and the 20-foot sample collected from SB14, respectively. The compound 2-butanone was detected at a maximum concentration of 6.7 $\mu\text{g}/\text{kg}$ in the 20-foot sample collected from SB14. The concentrations of both acetone and 2-butanone are below their respective preliminary remediation goals (PRGs). Based on the results of VSIs and field sampling activities at MSC JP5 Stations 886 and 887 and an evaluation of historical data, no further actions were recommended by the NFECSW SDIEGO. Furthermore, it was recommended to modify the ECP Category to 2a. The Regional Water Quality Control Board (RWQCB) concurred with the recommendation as stated in a letter dated 10 November 2004.

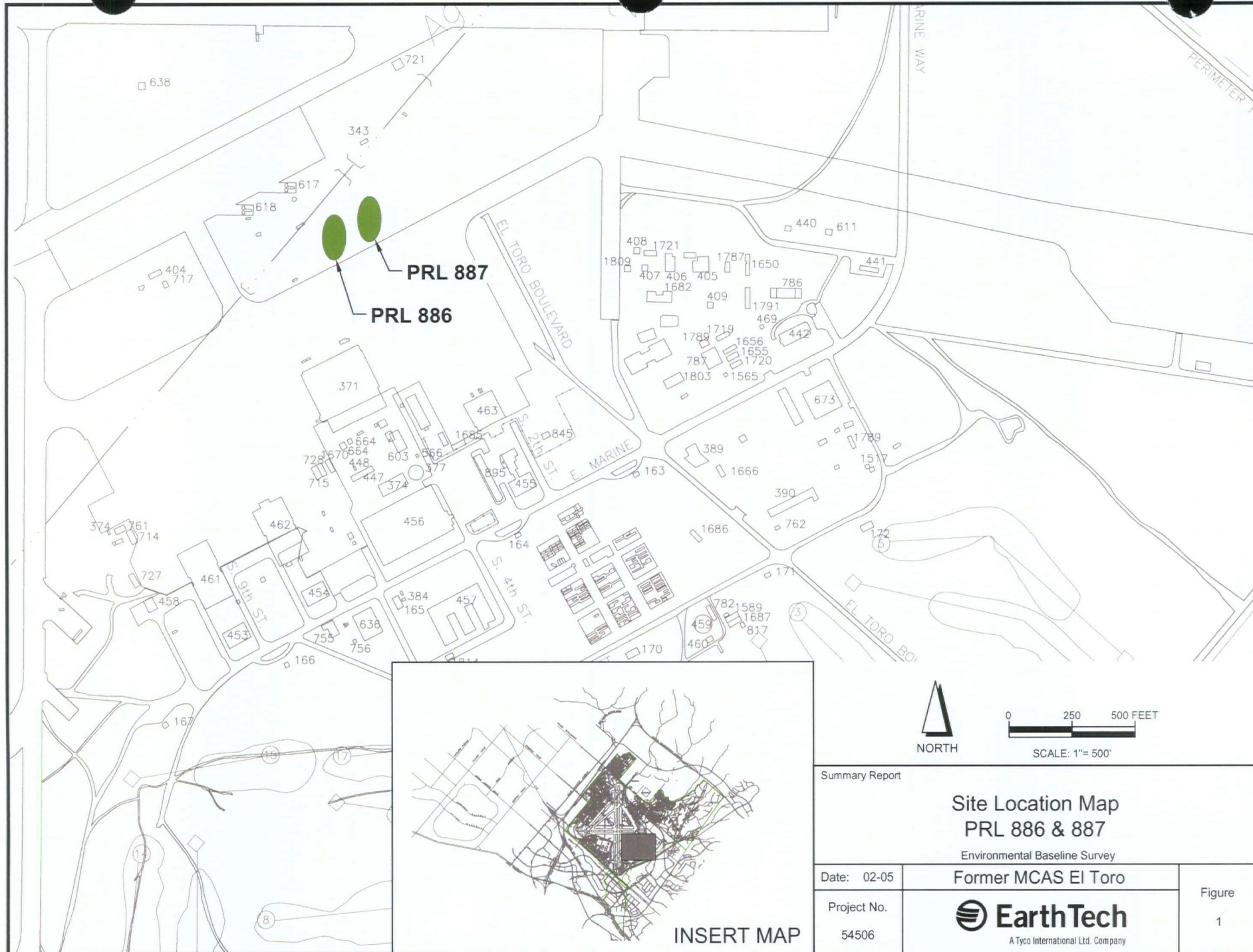
3. CONCLUSIONS AND RECOMMENDATIONS

Based on the results of past investigations, no evidence of a release exists and no further investigation is recommended for PRL 886/887.

4. REFERENCES

NFECSW SDIEGO. 2004. Transmittal, Analytical Data Package, PRL 886/887 (also known as MSC JP5 Stations 886 & 887), Former MCAS El Toro. September.

Figures



Summary Report

Site Location Map PRL 886 & 887

Environmental Baseline Survey

Date: 02-05

Former MCAS EI Toro

Project No.

54506

EarthTech

A Tyco International Ltd. Company

Figure

1

File: C:\Documents and Settings\Jeffrey.waugen\My Documents\cad_dwg\Working\CTO 104\Group 1 SR\SR PRL 886.dwg Time: Feb 18, 2005 -- 1:05pm



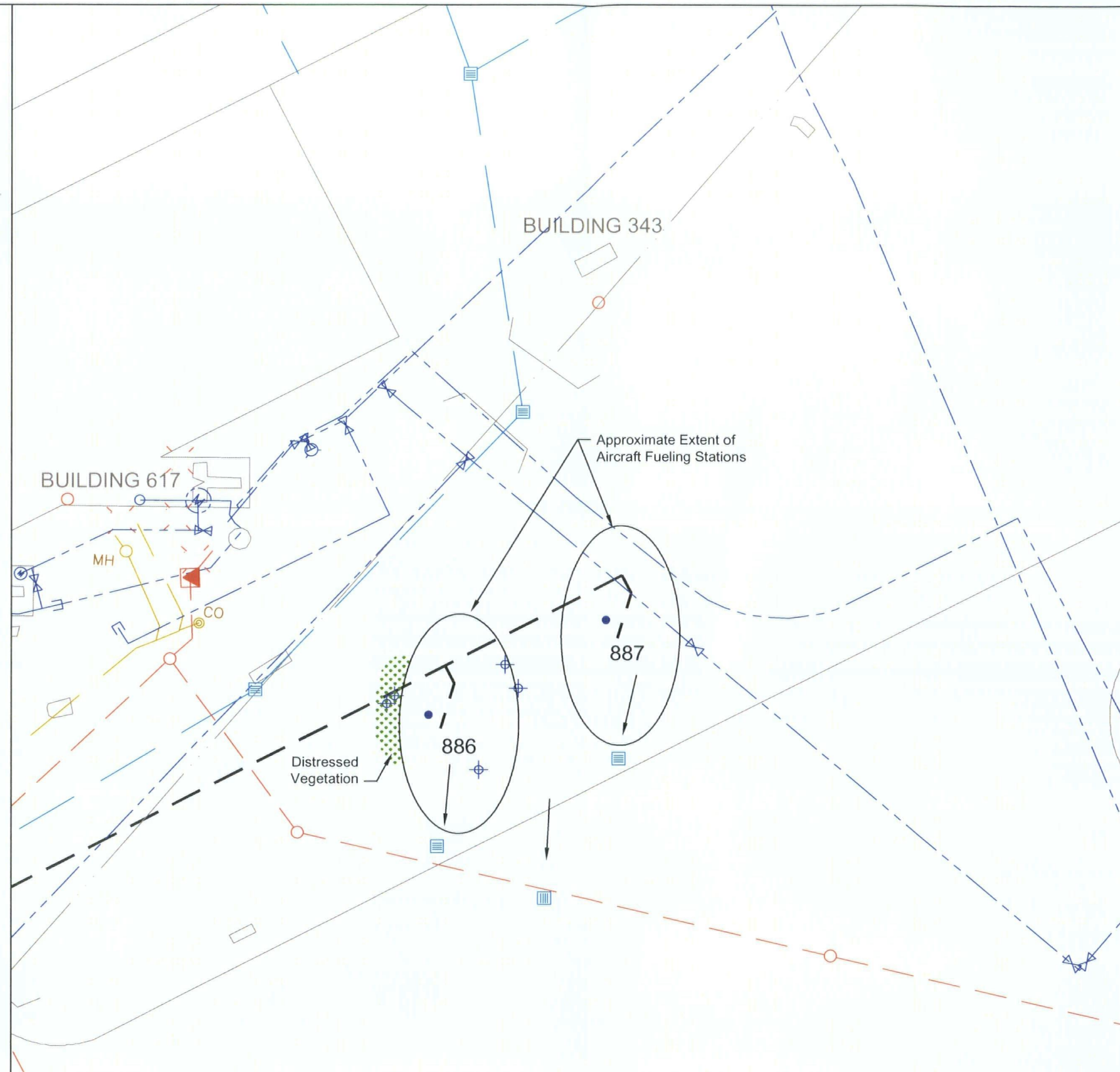
Building (Facility) 887, Aircraft Fueling Station,
with Building 371 in Background
(Facing South)



View of Building (Facility) 886
(Facing North)



Signs of Distressed Vegetation
West of Building (Facility) 886
(Facing North)



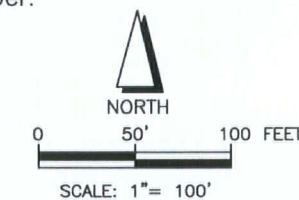
LEGEND:

- Sanitary Sewer
- Water Line
- Natural Gas Line
- Electrical Line
- CO Clean Out
- MH Manhole
- Storm Drain
- Transformer
- Fire Hydrant
- Water Valve
- JP5 Underground Fuel Pipeline
- Drainage Direction

- Approximate Boring Location (Jacobs 1993)
(Sample Depths: 0 to 25 feet bgs;
Analytes: TPH, VOCs, SVOCs, Metals)
- Approximate Boring Location
(NFECSW SDIEGO 2004)
(Sample Depths: 10 and 20 feet bgs;
Analytes: TPH, VOCs)

REFERENCES:

1. Jacobs Engineering Group, Inc. (Jacobs). 1993. Installation Restoration Program, Phase I Remedial Investigation Technical Memorandum, Marine Corps Air Station El Toro, California.
2. Southwest Division, Naval Facilities Engineering Command (NFECSW SDIEGO). 2004. *Transmittal, Analytical Data Package, PRL 886/887 (Also known as MSC JP5 Stations 886 & 887), Former MCAS El Toro*. September.



Note: Features and Interior Layout are Approximate and
May Not be to Scale

Summary Report

**Site Plan
PRL 886 & 887**

Environmental Baseline Survey

Date: 02-05	Former MCAS El Toro	Figure 2
Project No. 54506	 A Tyco International Ltd. Company	

February 2005

Summary Report for PRL 886/887
Former MCAS El Toro

Appendix A
Sampling Design Specification Sheet – PRL 886/887



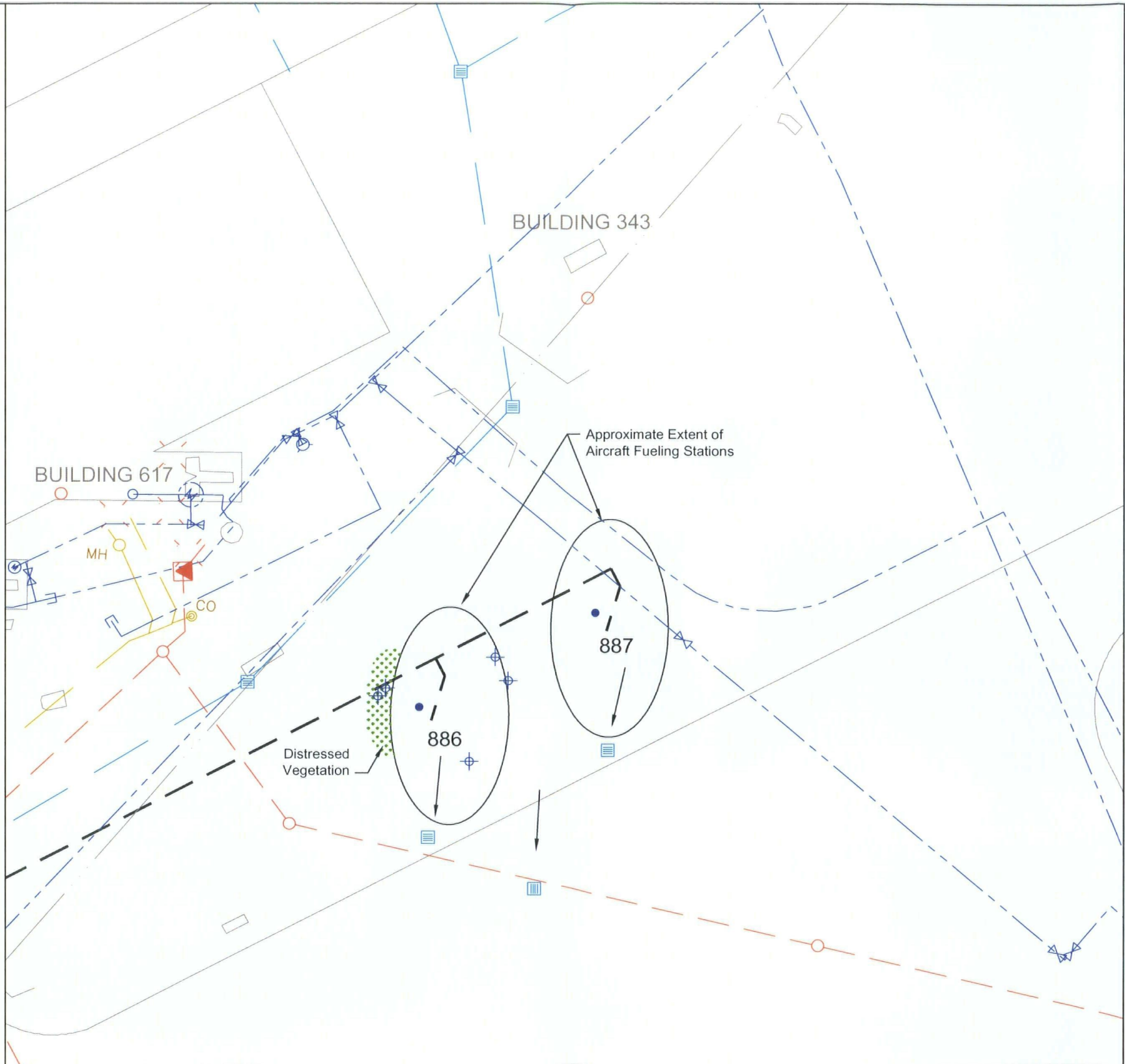
Building (Facility) 887, Aircraft Fueling Station, with Building 371 in Background (Facing South)



View of Building (Facility) 886 (Facing North)



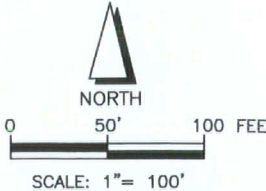
Signs of Distressed Vegetation West of Building (Facility) 886 (Facing North)



LEGEND:

- | | | |
|-------------------------------|-------------|--------------------|
| Sanitary Sewer | Clean Out | Transformer |
| Water Line | Manhole | Fire Hydrant |
| Electrical Line | Storm Drain | Water Valve |
| Storm Sewer | | Drainage Direction |
| Existing Infrastructure | | |
| JP5 Underground Fuel Pipeline | | |

Note: Locations of Features and Interior Layout are Approximate



Background
The facility was listed as Aircraft Direct Fueling Station in the 1997 station list and it is the last known description. These facilities do not consist of actual structures but were designated as buildings for listing and tracking purposes. The facilities are not currently operational and consist only of concrete slabs adjacent to the runways.

Issues/Concerns
1. These facilities are situated in the southeast portion of MCAS El Toro adjacent to Agua Chionon Wash and north of Building 371. Facilities are similar to those identified by RFA sites 15, 16, 257, and 258 (northeast flight line), but have not yet been investigated to determine if JP-5 jet fuel has been released to the soil. No evidence of staining on concrete fueling pad or in the surrounding soils was noted during the VSI conducted in 2002 in support of the EBS. Further evaluation is recommended.
2. Stressed vegetation was observed to the northwest of the fueling stations.

2004 Soil Sampling
Based on the review of available documentation, including similar activities at other DOD installations, and in concurrence with the regulatory agencies, sampling was conducted at former Fueling Stations 886 and 887 on 9 August 2004. Soil borings, SB13 and SB14 were advanced in the vicinity of Stations 886 and 887, respectively. Two soil samples were collected from each boring, one at 10 feet below ground surface (bgs) and the other at 20 feet bgs, and analyzed for TPH (as gasoline and JP-5) and VOCs. Gasoline and JP-5 were not detected above their respective laboratory reporting limits in any sample. Additionally, BTEX and fuel oxygenates were not detected in any of the samples. Acetone was detected at concentrations of 31 and 34 mg/kg in a 10-foot sample collected from SB13 and 20-foot sample collected from SB14, respectively. 2-Butanone was detected at a maximum concentration of 6.7 mg/kg in the 20-foot sample collected from SB14. The concentrations of both acetone and 2-butanone are below their respective PRGs. It is possible that the presence of these analytes are a result of laboratory contamination. Based on these results no evidence of a release exists and no further investigation is recommended for this site.

References
1. Jacobs Engineering Group, Inc. (Jacobs). 1993. Installation Restoration Program, Phase I Remedial Investigation Technical Memorandum, Marine Corps Air Station El Toro, California.
2. Southwest Division, Naval Facilities Engineering Command (NFECSW SDIEGO). 2004. Transmittal, Analytical Data Package, PRL 886/887 (Also known as MSC JP5 Stations 886 & 887), Former MCAS El Toro. September.

Preliminary Assessment		Final
Proposed Sampling Locations PRL 886 & 887		
Environmental Baseline Survey		
Date: 01-05	Former MCAS El Toro	
Project No. 54506	 A Tyco International Ltd. Company	

Attachment 11
Summary Report
PRL RIA



Summary Report for PRL RIA, Environmental Baseline Survey

**Former Marine Corps Air Station,
El Toro, California**

February 2005

Prepared for:
**Base Realignment and Closure
Program Management Office West
1230 Columbia Street, Suite 1100
San Diego, CA 92101**

Prepared by:
**Earth Tech, Inc.
841 Bishop Street, Suite 500
Honolulu, HI 96813-3920**

Prepared under:
**Comprehensive Long-Term Environmental Action Navy
Contract Number N62742-94-D-0048, CTO 0104**

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ACRONYMS AND ABBREVIATIONS

BCT	BRAC Cleanup Team
bgs	below ground surface
BNI	Bechtel National Inc.
BRAC	Base Realignment and Closure
DTSC	Department of Toxic Substances Control
EBS	environmental baseline survey
ECP	Environmental Condition of Property
EPA	Environmental Protection Agency
EPC	exposure point concentration
HI	hazard index
LOC	location of concern
MCAS	Marine Corps Air Station
µg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
NFEC SW SDIEGO	Naval Facilities Engineering Command, Southwest
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PRG	preliminary remediation goal
PRL	potential release location
RIA	Runway Infield Area
TPH	total petroleum hydrocarbons

1. BACKGROUND

The runways at the former Marine Corps Air Station (MCAS) El Toro were originally constructed between 1942 and 1943 and have undergone several modifications and extensions over the life of the station (Figure 1). Waste petroleum, waste oil and other liquid wastes (potentially containing polychlorinated biphenyls [PCBs]) were applied to unpaved areas along the edges of the runways for dust suppression and control of vegetation. Past releases of fuel and lubricants onto the runways and taxiways potentially migrated to bordering unpaved areas and drainage systems through washing and storm water runoff. Byproducts of combustion from jet engines may also have accumulated in the surrounding soil and structures especially in areas used for engine testing and run-up (Jet Blast Deflector Areas). Based on this information, the 1995 environmental baseline survey (EBS) (JEG 1995) identified the Airfield Operations Area (comprising runways, taxiways and adjacent areas) as a location of concern (LOC). Sampling of this LOC was conducted as part of the station-wide polynuclear aromatic hydrocarbon (PAH) study to establish background levels of PAHs in MCAS El Toro surface soils (BNI 1996). The findings of this study are documented in the *Final Report, Anthropogenic PAH Reference-Level Study, Marine Corps Air Station El Toro, California* (BNI 1996). This study concluded that, due to the urban setting, station-wide PAH reference-level concentrations did not exceed Environmental Protection Agency (EPA) Region 9 residential soil preliminary remediation goals (PRGs). Additionally, the study concluded that the reported results of the dioxin and metals analyses were supportive of unrestricted release of the runway parcels and the Federal Facility Agreement signatories concurred with this finding. Subsequently, the portions of the airfield operations area that were considered LOCs were changed from Environmental Condition of Property (ECP) Type 7 to ECP Type 3 (NFECSW SDIEGO 1998). ECP Category 7 was assigned to areas that have not been evaluated or that require additional evaluation. ECP Category 3 was assigned to areas where release, disposal, and/or migration of hazardous substances have occurred, but at concentrations that do not require a removal or remedial action. Subsequent to this, the BRAC (Base Realignment and Closure) Clean-up Team (BCT) requested further evaluation of the runways area for PCBs and PAHs. The runways were identified as Potential Release Location (PRL) Runways for the 2002 EBS (Earth Tech 2003).

Based on the review of available documentation, including similar activities at other Department of Defense installations, and in concurrence with the regulatory agencies, sampling along the edges of concrete runways was conducted during 2003. Similarly, impacts under the existing concrete runways where runway extensions were added after the construction of the original runway were also evaluated. Soil samples were collected from a total of 13 areas and analyzed for PCBs, PAHs, and total petroleum hydrocarbons (TPH) (Figure 1) using EPA SW-846 Methods 8082, 8270, and 8015B, respectively. At each area, two soil samples were collected from boreholes drilled approximately 25 feet apart (designated A and B, respectively: e.g., HA7A and HA7B), and composited for laboratory analysis. The results were presented in Appendix E of the *Final Environmental Baseline Survey, Former MCAS El Toro, California* (Earth Tech 2003). The only analyte exceeding its residential PRG was benzo(a)pyrene (160 milligrams per kilogram [mg/kg]) detected in the soil sample from borehole HA7. Aroclor 1260 was the only PCB detected in soil samples at a maximum concentration of 9 micrograms per kilogram ($\mu\text{g/kg}$), which is less than its residential PRG of 220 $\mu\text{g/kg}$.

Based on the 2003 sampling results, the BCT concurred with the finding of no further action for the remainder of the runway area (Earth Tech 2003), except for the area in the vicinity of sampling location HA7. In a letter dated 11 April 2003, EPA requested further evaluation in the vicinity of location HA7. In a letter dated 11 April 2003, Department of Toxic Substances Control (DTSC) recommended that discrete samples be collected from locations HA7A and HA7B and analyzed for

PAHs. To further investigate the area in the vicinity of sampling location HA7, this area was designated as PRL Runway Infield Area (RIA).

1.1 ISSUES AND CONCERNS

The following issues and concerns associated with this PRL were identified through the records search and visual site inspections conducted in 2002 and 2004:

- The 2003 soil sampling results indicated a need to delineate the horizontal extent of soil containing one or more PAHs at concentrations exceeding their corresponding residential PRGs.

A sampling program was proposed to further investigate the issues identified and assess whether a release to the environment of hazardous substances or pollutants has occurred. A summary of soil sampling activities is presented in Section 2, and the results are presented in Section 3.

2. SAMPLING AND ANALYSIS SUMMARY

Sampling was conducted for additional evaluation of PAHs at PRL RIA in March and October 2004. The sampling locations are shown in Figure 2, and a summary of sampling and analyses is provided in Table 1. The sampling design specification sheet presenting the rationale for the design and sampling locations is presented in Appendix B of this summary report.

In March 2004, soil samples were collected from five locations (HA7A, HA7B, HA16, HA17, and HA18) in the vicinity of HA7 in accordance with the sampling plan presented to the BCT (Figure 2). All five samples were collected at a depth of 6 inches below ground surface (bgs) and analyzed for PAHs. Three samples collected from locations HA16, HA17, and HA18, were analyzed for total petroleum hydrocarbons (TPH). The results for TPH were reported as total petroleum hydrocarbons as gasoline (TPH_g), total petroleum hydrocarbons as diesel (TPH_d), and total petroleum hydrocarbons as motor oils (TPH_m).

Results of the March 2004 sampling event indicated a potential for more widespread PAH contamination. Therefore, based on the analyses of trends in PAH concentrations and the site conceptual model, which indicates greater probability of the presence of PAHs along the edge of the runway, six additional soil samples were collected in October 2004. The samples were collected from locations HA19 through HA24 (Figure 2) at a depth of 6 inches bgs and analyzed for PAHs, TPH_d, and TPH_m.

3. INVESTIGATION RESULTS

3.1 ANALYTICAL RESULTS AND QUALITY ASSURANCE

A total of 11 discrete soil samples were collected at PRL RIA in January and October 2004. Table 2 presents detected analytes along with the corresponding EPA Region 9 or California EPA (Cal-Modified) residential PRGs (EPA Region 9 2004). Appendix B presents the validated laboratory analytical data and Appendix C presents the land surveying data.

Some results were qualified as estimated or non-detect in the data validation process. These qualifications do not affect the findings or conclusions of this report.

The analytes that exceeded residential PRGs were benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and dibenz(a,h)anthracene. Benzo(a)pyrene exceeded the residential PRG

(62 µg/kg) in eight soil samples and was detected at concentrations ranging from 12 to 930 µg/kg; benzo(b)fluoranthene exceeded the residential PRG (620 µg/kg) in three soil samples and was detected at concentrations ranging from 19 to 1200 µg/kg; benzo(k)fluoranthene exceeded the residential PRG (380 µg/kg) in four soil samples and was detected at concentrations ranging from 6 to 660 µg/kg; and dibenz(a,h)anthracene exceeded the residential PRG (62 µg/kg) in five soil samples and was detected at concentrations ranging from 2 to 170 µg/kg.

Concentration profiles perpendicular to the length of the runway were plotted to delineate the extent of PAH concentrations exceeding residential PRGs from the edge of the runway. Figures 3 through 6 present concentration profiles perpendicular to the edge of the runway for benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and dibenz(a,h)anthracene, respectively. The samples used to generate these profiles were collected from locations HA7A, HA16, HA7B, HA17, and HA22, in which PAHs exceeded residential PRGs in at least one sample.

All profiles show a rapid drop in concentrations of PAHs at a distance of approximately 20 to 30 feet from the edge of the runway. The profiles also show that soil with PAH concentrations greater than residential PRGs can be conservatively approximated to extend 50 feet from the edge of the runway. The observation that no PAH exceeded residential PRGs in two samples collected 25 feet north and south of HA22 and at the distance of 70 feet from the edge of the runway supports this observation.

No discernable trend was observed in PAH concentrations along the length of the runway as evident from the analytical results of samples from HA19, HA20, HA16, HA7A, HA7B, HA18, and HA24. Additionally, the analytical results of these samples suggest that the extent of PAHs above residential PRGs may not be fully delineated and may extend north of HA19 and south of HA24.

TPH_g was not detected in the three sample locations tested. TPH_d was detected at nine sample locations at concentrations ranging from 2 to 84 mg/kg. TPH_m was detected in all the nine samples analyzed at concentrations ranging from 13 to 760 mg/kg.

The observation of TPH_d and TPH_m and PAH results indicates a positive correlation between this set of values for the soil samples analyzed. This, along with the existence of PAH contamination greater than residential PRGs approximately 50 feet from the edge of the runway indicates that the source of PAHs at the PRL RIA may be waste fuel (diesel), waste oil, and other liquid wastes historically applied along the edges of the runways. Migration of fuel releases and lubricants from the runways through storm water runoff and leaching from broken asphalt may also be responsible for PAH contamination at PRL RIA.

3.2 RESULT EVALUATION AND RISK SCREENING

Risk screening was performed to evaluate risks associated with potential exposures to PAHs identified in the soil at PRL RIA. The methodology for risk screening is presented in Section 3.2 of the Summary Report and results are presented in Table 3.

The cumulative maximum carcinogenic risk due to potential exposure to maximum detected concentrations of PAHs (maximum exposure point concentration [EPCs]) is 2.3E-05 for a residential reuse scenario. This is above the EPA point of departure risk level of 10⁻⁶, but below the action level (10⁻⁴) typically associated with remediation requirements. The maximum EPCs for benzo(a)pyrene (930 µg/kg) and dibenz(a,h)anthracene (170 µg/kg) account for 64 and 12 percent of the risk, respectively. The remainder of the risk is contributed by benzo(b)fluoranthene (8 percent), benzo(k)fluoranthene (7 percent), benzo(a)anthracene (4 percent), indeno(1,2,3-cd)pyrene (4 percent), and chrysene (1 percent).

The cumulative noncancer hazard associated with potential exposure to maximum EPCs of PAHs is expressed as hazard index (HI) of 0.0018, which is below the target HI of 1.

The cumulative maximum noncarcinogenic hazard associated with potential exposure to maximum detected concentrations of copper and tin is expressed as hazard index (HI) of 2.4E-3, which is below the target HI of 1.

4. CONCLUSIONS AND RECOMMENDATIONS

The soil sampling conducted at PRL RIA provides a reasonable assessment of whether a release of hazardous substances has occurred into the environment. The risk screening conducted based on the results of soil sampling provides a reasonable evaluation of risk to human health. Following is the summary of the findings of soil sampling at PRL RIA:

- PAHs including benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and dibenz(a,h)anthracene are present at concentrations exceeding their respective residential PRGs at the PRL RIA.
- The PAH that exceeded its residential PRG at the maximum number of locations was benzo(a)pyrene.
- Benzo(a)pyrene is the primary contributor to the carcinogenic risk at PRL RIA.
- PAH concentrations greater than residential PRGs can be conservatively approximated to extend 50 feet from the edge of the runway. This observation, along with the existence of positive correlation between TPH_d, TPH_m and PAH concentrations, suggests that the likely source of PAHs is waste fuel (diesel), waste oil, and/or other liquid wastes historically applied along the edges of the runways.
- No discernable trend was observed in PAH concentrations along the length of the runway. Additionally, the sampling results suggest that the extent of PAHs above residential PRGs may not be fully delineated along the length of the runway.
- The cumulative maximum carcinogenic risk due to potential exposure to maximum detected concentrations of PAHs is 2.3E-05, which is above the EPA point of departure risk level of 10⁻⁶, but below the action level (10⁻⁴) typically associated with remediation requirements.
- The cumulative maximum noncancer hazard expressed as HI was calculated to be 1.8E-3, which is below the target HI of 1.

PAHs in excess of residential PRGs are present at PRL RIA. Potential sources of PAHs include application of waste fuel (diesel) or waste oil for dust suppression and vegetation control, storm water runoff from the runways, and leaching from asphalt paving.

While the extent of PAH concentrations greater than residential PRGs has been delineated perpendicular to the runway, the extent along the length of the runway is not fully delineated. Further investigation is recommended to delineate the PAH contamination exceeding residential PRGs along the length of the runway. Following delineation of the extent of PAH contamination, the risk screening calculations should be revised and further investigation should be considered.

5. REFERENCES

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- Southwest Division, Naval Facilities Engineering Command (NFECSW SDIEGO). 1998. *Base Realignment and Closure Business Plan*.

Tables

Table 1: Sampling and Analyses Summary – PRL RIA

Sample Location	EPA ID	Sample Depth (feet bgs)	Sampling Technique	Analyte Group / Analytical Method ^a	
				PAHs 8270	TPH ^b 8015B
HA7A	LJ299	0.5	Hand auger	X	--
HA7B	LJ300	0.5	Hand auger	X	--
HA16	LJ301	0.5	Hand auger	X	X
HA17	LJ302	0.5	Hand auger	X	X
HA18	LJ303	0.5	Hand auger	X	X
HA19	LJ335	0.5	Hand auger	X	X
HA20	LJ336	0.5	Hand auger	X	X
HA21	LJ337	0.5	Hand auger	X	X
HA22	LJ338	0.5	Hand auger	X	X
HA23	LJ339	0.5	Hand auger	X	X
HA24	LJ340	0.5	Hand auger	X	X

Notes:

^a Analysis was in general accordance with the listed methods provided in EPA Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

^b Analytical results for TPH were reported as total petroleum hydrocarbons as gasoline (TPH_g), total petroleum hydrocarbons as diesel (TPH_d), and total petroleum hydrocarbons as motor oils (TPH_m).

X = analysis was performed for the specified analyte

-- = analysis was not performed for the specified analyte

Table 2. Analytical Results Summary - PRL RIA

Analyte	MCAS El Toro		Residential Soil PRG ^a	Sample Location	PRL-RWY- HA7A	PRL-RWY-HA7B	PRL-RIA-HA16	PRL-RIA-HA17	PRL-RIA-HA18	PRL-RIA-HA19	PRL-RIA-HA20	PRL-RIA-HA21	PRL-RIA-HA22	PRL-RIA-HA23	PRL-RIA-HA24
	Anthropogenic Reference Level			Sample Depth	0.5 feet bgs	0.5 feet bgs	0.5 feet bgs	0.5 feet bgs	0.5 feet bgs	0.5 feet bgs	0.5 feet bgs	0.5 feet bgs	0.5 feet bgs	0.5 feet bgs	0.5 feet bgs
	Maximum Value	95% UCL		Sample Name	LJ299	LJ300	LJ301	LJ302	LJ303	LJ335	LJ336	LJ337	LJ338	LJ339	LJ340
Polynuclear Aromatic Hydrocarbons (PAHs) (µg/kg)															
2-Methylnaphthalene	—	--	--		3 J	3 J	110 U	27 U	27 U	2 J	2700 U	0.5 J	0.7 J	0.9 J	2 J
Acenaphthene	4	--	3.7E+06		17 J	9 J	22 J	27 U	2 J	5 J	2700 U	26 U	0.6 J	0.5 J	7 J
Acenaphthylene	4	--	--		140	210	320	28	54	100	340 J	3 J	5 J	7 J	200
Anthracene	8	--	2.2E+07		150	130	200	20 J	32	49 J	150 J	2 J	2 J	3 J	80
Benzo(a)anthracene	70	22	6.2E+02		573	390	570	47	93	130	460 J	6 J	8 J	7 J	240
Benzo(a)pyrene	110	27	6.2E+01		530	480	710	66	130	230	930 J	12 J	15 J	19 J	532
Benzo(b)fluoranthene	95	28	6.2E+02		490	400	760	78	110	350	1200 J	19 J	26	27	885
Benzo(g,h,i)perylene	95	29	--		200	210	360	40	65	74 J	560 J	9 J	8 J	11 J	190
Benzo(k)fluoranthene ^b	100	24	3.8E+02		500	430	610	62	150	140	660 J	6 J	8 J	14 J	150
Chrysene ^b	100	31	3.8E+03		579	420	660	72	120	160	740 J	11 J	14 J	17 J	300
Dibenz(a,h)anthracene	30	8	6.2E+01		110	110	170	18 J	30	24 J	130 J	2 J	2 J	3 J	66
Fluoranthene	150	45	2.3E+06		921 J	490 J	850	96	140	310	1300 J	21 J	25 J	32	545
Fluorene	—	--	2.7E+06		30	14 J	26 J	2 J	3 J	7 J	2700 U	0.4 J	0.5 J	0.5 J	12 J
Indeno(1,2,3-cd)pyrene	84	21	6.2E+02		210	220	360	40	68	80 J	530 J	8 J	8 J	10 J	210
Naphthalene ^b	2	—	1.7E+03		5 J	6 J	31 J	6 J	3 J	5 J	38 J	0.8 J	1 J	2 J	6 J
Phenanthrene	65	18	--		704	210	490	50	55	130	470 J	9 J	9 J	14 J	170
Pyrene	140	41	2.3E+06		1,070	666	1,000	100	170	310	1200 J	20 J	23 J	30	629
Total Petroleum Hydrocarbons (mg/kg)															
TPH as Gasoline	--	--	--		NA	NA	11 U	11 U	10 U	NA	NA	NA	NA	NA	NA
TPH as Diesel	--	--	--		NA	NA	15	3 J	4 J	6 J	84	2 J	3 J	10 U	9 J
TPH as Motor Oil	--	--	--		NA	NA	110	23	31	110	760	14	20	13	47

Notes

- Concentrations in **bold** indicate values above residential soil PRGs.
- U = Indicates the compound or analyte was analyzed for but was not detected at or above the stated limit.
- J = Indicates an estimated value
- = Value does not exist
- NA = not analyzed
- ^a = Analytical results for all PAHs were compared to EPA Region 9 PRGs (2004), with the exception of benzo(k)fluoranthene, chrysene, and naphthalene (see note b)
- ^b = Analytical results for benzo(k)fluoranthene, chrysene, and naphthalene were compared to Cal-Modified PRGs (2004) since they are significantly more protective than corresponding EPA Region 9 PRGs.

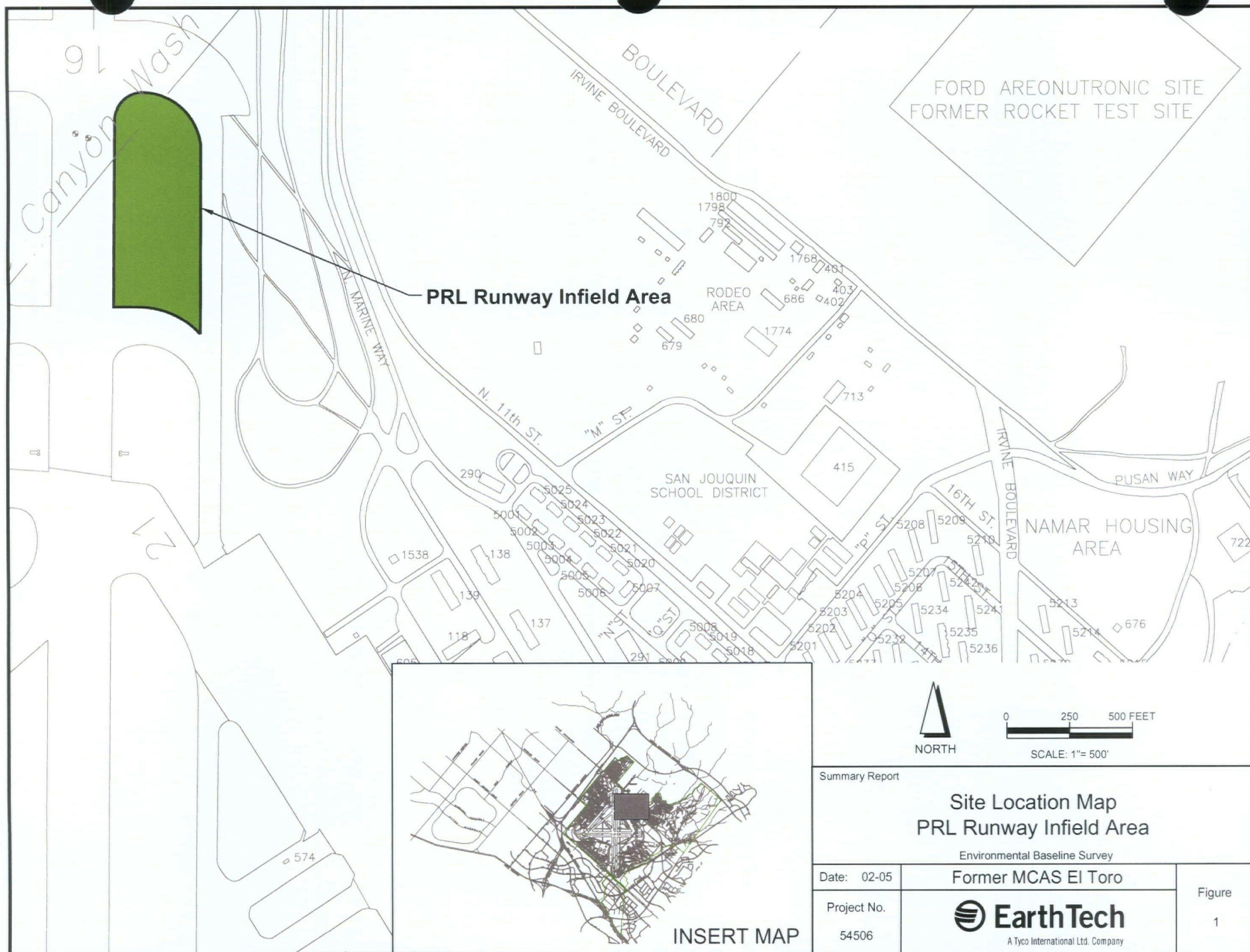
Table 3: Risk Screening Results - PRL RIA

Chemical of Potential Concern	Maximum EPC ^f (µg/kg)	Carcinogenic PRG ^a (µg/kg)	Noncarcinogenic PRG ^a (µg/kg)	Risk Corresponding to Maximum EPC			
				Carcinogenic		Noncarcinogenic	
				Excess Cancer Risk ^b	Percent Contribution to Cancer Risk ^c	HI ^d	Percent Contribution to Noncancer Risk ^c
Polynuclear Aromatic Hydrocarbons							
2-Methylnaphthalene	3	--	--	--	--	--	--
Acenaphthene	22	--	3.7E+06	--	--	6.0E-06	0%
Acenaphthylene	340	--	--	--	--	--	--
Anthracene	200	--	2.2E+07	--	--	9.1E-06	1%
Benzo(a)anthracene	573	6.2E+02	--	9.2E-07	4%	--	--
Benzo(a)pyrene	930	6.2E+01	--	1.5E-05	64%	--	--
Benzo(b)fluoranthene	1200	6.2E+02	--	1.9E-06	8%	--	--
Benzo(g,h,i)perylene	560	--	--	--	--	--	--
Benzo(k)fluoranthene ^g	660	3.8E+02	--	1.7E-06	7%	--	--
Chrysene ^g	740	3.8E+03	--	2.0E-07	1%	--	--
Dibenz(a,h)anthracene	170	6.2E+01	--	2.7E-06	12%	--	--
Fluoranthene	1,300	--	2.3E+06	--	--	5.7E-04	32%
Fluorene	30	--	2.7E+06	--	--	1.1E-05	1%
Indeno(1,2,3-cd)pyrene	530	6.2E+02	--	8.5E-07	4%	--	--
Naphthalene ^g	38	1.7E+03	5.6E+04	2.2E-08	0%	6.8E-04	38%
Phenanthrene	704	--	--	--	--	--	--
Pyrene	1,200	--	2.3E+06	--	--	5.2E-04	29%
Cumulative Maximum Risk				2.3E-05	1.8E-03		

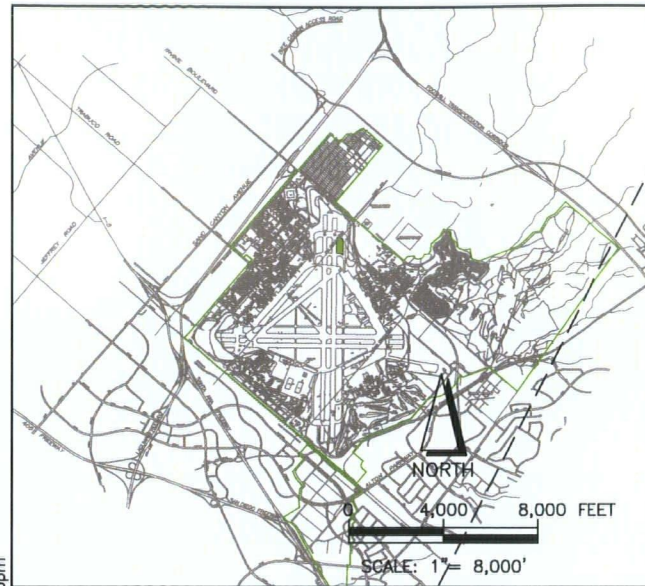
Notes:

^a EPA Region 9 PRGs (2004) were used for risk screening for all chemicals except benzo(k)fluoranthene, chrysene, and naphthalene (see note e)^b Excess cancer risk = 1E-06 x (Maximum EPC/Carcinogenic PRG)^c With respect to cumulative excess cancer risk/hazard index^d HI = Maximum EPC / Noncarcinogenic PRG^e Cal-Modified Carcinogenic PRGs (2004) were used for benzo(k)fluoranthene, chrysene, and naphthalene for excess cancer risk calculation since they are significantly more protective than corresponding EPA Region 9 PRGs.^f EPC = exposure point concentration

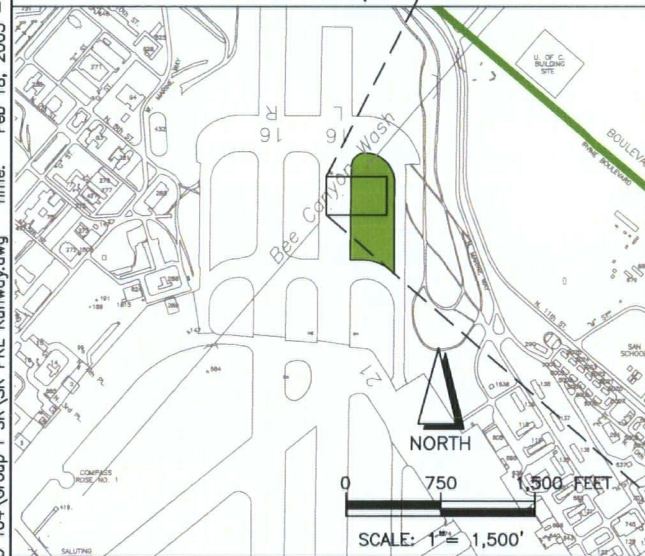
Figures



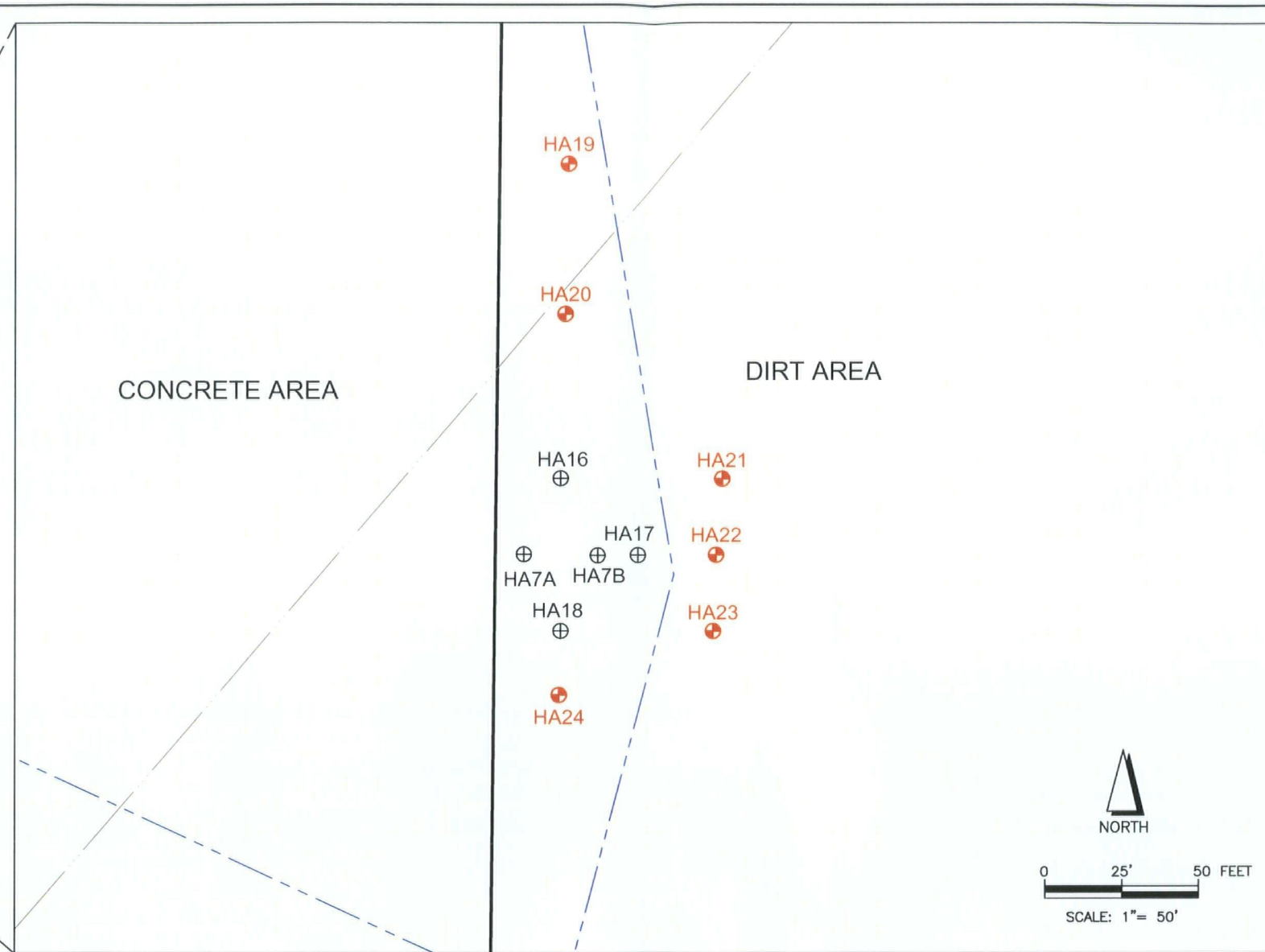
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Base Map



Area Map

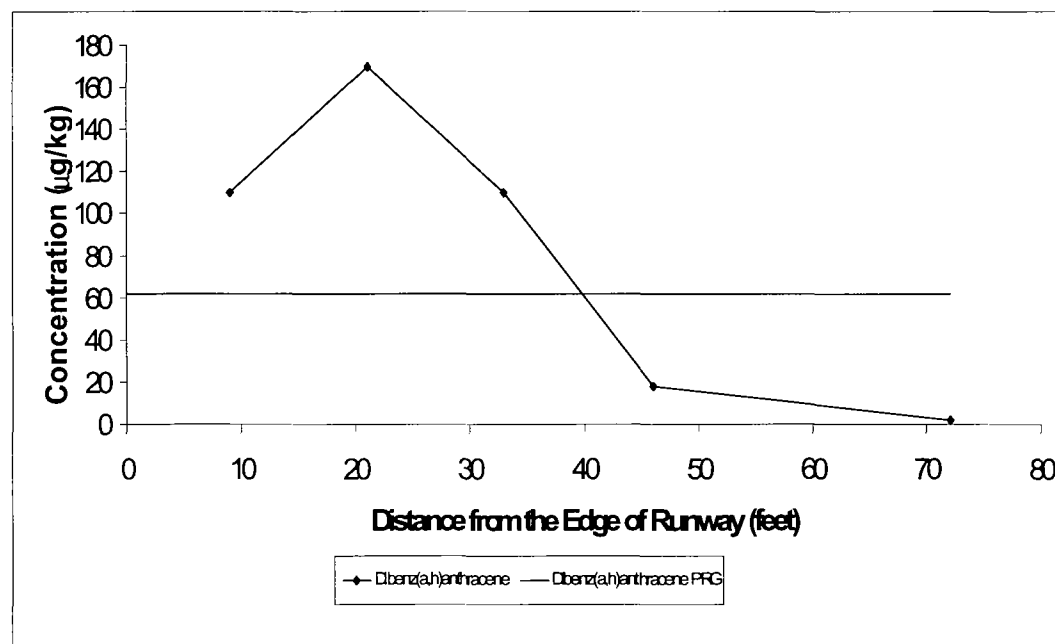
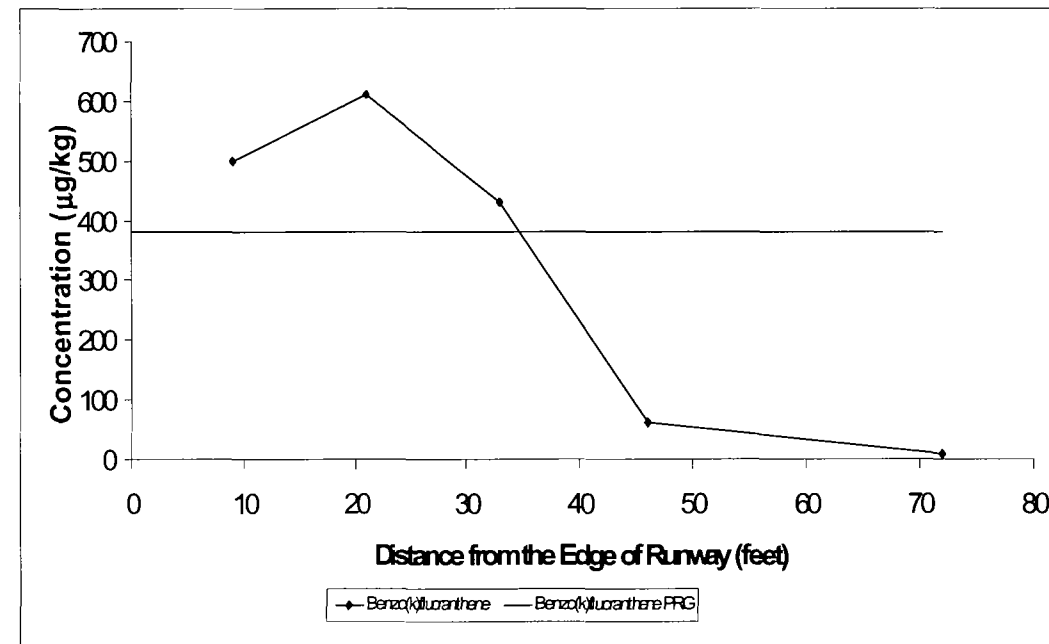
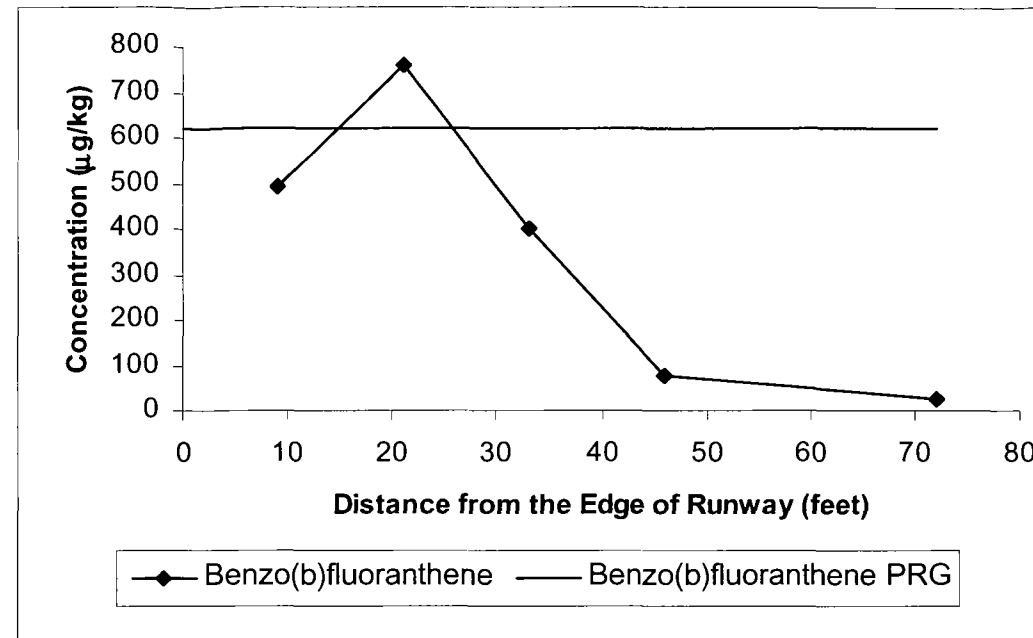
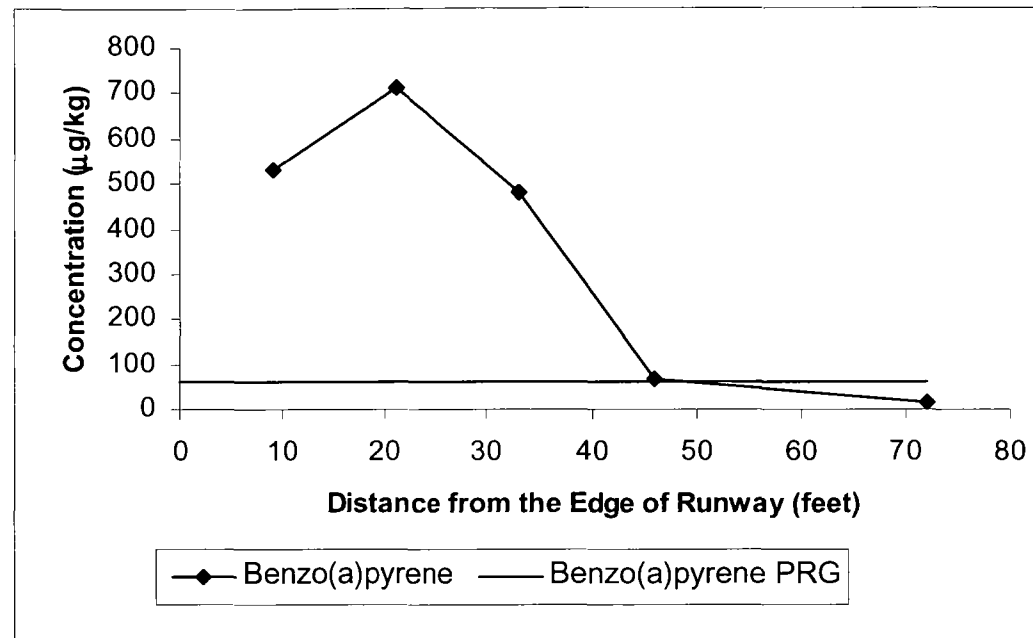



LEGEND:

- HA7A ⊕ 2004 Soil Sampling Location
- HA24 ⊕ 2004 Additional Soil Sample Location
- Water Line
- Bee Canyon Wash (Underground)
- ft Feet

Note: Features and Interior Layout are Approximate and May Not be to Scale

Summary Report		
Site Plan		
PRL Runway Infield Area		
Environmental Baseline Survey		
Date: 02-05	Former MCAS El Toro	Figure 2
Project No. 54506	 A Tyco International Ltd. Company	



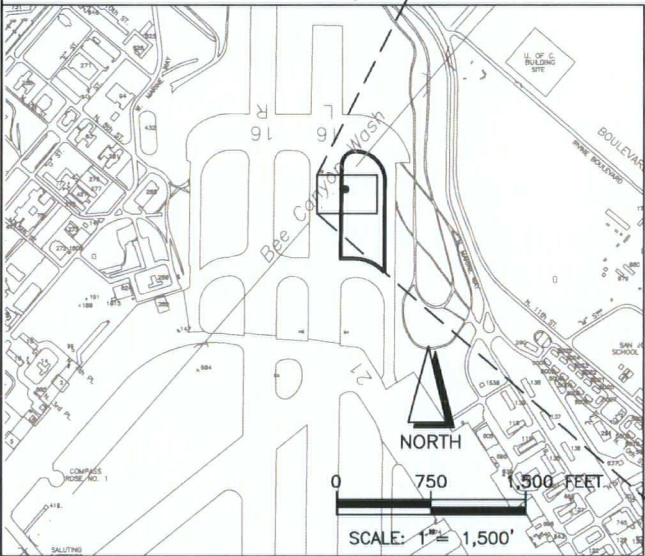
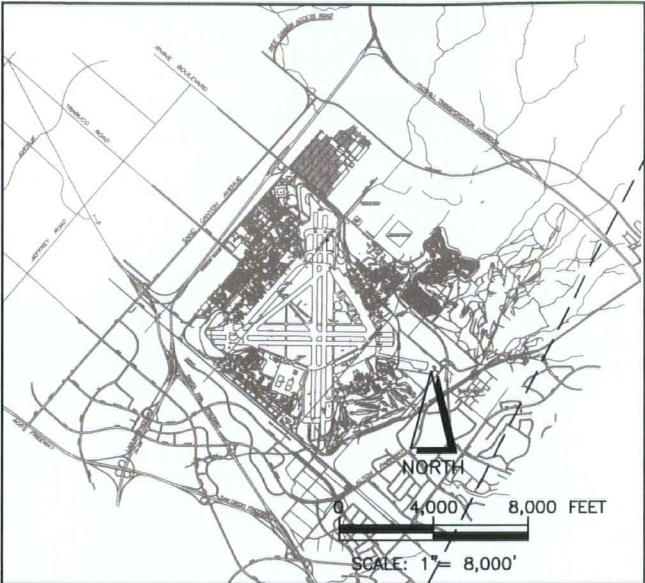
Summary Report		
Concentration Profiles of PAHs with Distance from Edge of Runway		
Environmental Baseline Survey		
Date: 02-05	Former MCAS El Toro	Figure 3
Project No. 54506	 EarthTech <small>A Tyco International Ltd. Company</small>	

February 2005

Summary Report for PRL RIA
Former MCAS El Toro

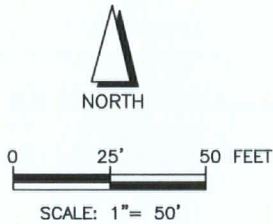
Appendix A
Sampling Design Specification Sheet – PRL RIA

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CONCRETE AREA

DIRT AREA



Analytical Results, PRL-Runway Infield Area

Analyte	Units	Residential Soil PRG	PRL-RWY- HA7A 0.5 feet bgs LJ299	PRL-RWY-HA7B 0.5 feet bgs LJ300	PRL-RWY-HA16 0.5 feet bgs LJ301	PRL-RWY-HA17 0.5 feet bgs LJ302	PRL-RWY-HA18 0.5 feet bgs LJ301
Polynuclear Aromatic Hydrocarbons (PAHs)							
2-Methylnaphthalene	µg/kg	--	3 J	3 J	110 U	27 U	27 U
Acenaphthene	µg/kg	3.7E+06	17 J	9 J	22 J	27 U	2 J
Acenaphthylene	µg/kg	--	140	210	320	28	54
Anthracene	µg/kg	2.2E+07	150	130	200	20 J	32
Benzo(a)anthracene	µg/kg	6.2E+02	573	390	570	47	93
Benzo(a)pyrene	µg/kg	6.2E+01	530	480	710	66	130
Benzo(b)fluoranthene	µg/kg	6.2E+02	490	400	760	78	110
Benzo(g,h,i)perylene	µg/kg	--	200	210	360	40	65
Benzo(k)fluoranthene	µg/kg	3.8E+02	500	430	610	62	150
Chrysene	µg/kg	3.8E+03	579	420	660	72	120
Dibenz(a,h)anthracene	µg/kg	6.2E+01	110	110	170	18 J	30
Fluoranthene	µg/kg	2.3E+06	921 J	490 J	850	96	140
Fluorene	µg/kg	2.8E+06	30	14 J	26 J	2 J	3 J
Indeno(1,2,3-cd)pyrene	µg/kg	6.2E+02	210	220	360	40	68
Naphthalene	µg/kg	5.6E+04	5 J	6 J	31 J	6 J	3 J
Phenanthrene	µg/kg	--	704	210	490	50	55
Pyrene	µg/kg	2.3E+06	1,070	666	1,000	100	170
Hydrocarbons							
Total Volatile Petroleum Hydrocarbons as Gasoline	mg/kg	--	NA	NA	11 J	11 J	10 J
Total Extractable Petroleum Hydrocarbons as Diesel	mg/kg	--	NA	NA	15	3 J	4 J
Total Extractable Petroleum Hydrocarbons as Motor Oil	mg/kg	--	NA	NA	110	23	31

Notes:
Concentrations in **bold font** indicate detections above PRGs.
µg/kg = micrograms per kilogram.
NA = The sample was not analyzed for the specified analyte.
PRG = Preliminary Remediation Goal
-- = The regulatory threshold does not exist for the specified analyte.
U = The analyte was not detected above the detection limit shown.
J = The concentration is an estimate.

LEGEND:

- HA7A ⊕ 2004 Soil Sampling Location
- HA24 ⊕ Proposed Additional Soil Sample Location
- Water Line
- Bee Canyon Wash (Underground)
- ft Feet

Background

The runways at the former MCAS El Toro were originally constructed between 1942 and 1943 and have undergone several modifications and extensions over the life of the station. Waste petroleum, waste oil and other liquid wastes (potentially containing PCBs) were applied to unpaved areas along the edges of the runways for dust suppression and control of vegetation. Past releases of fuel and lubricants onto the runways and taxiways potentially migrated to bordering unpaved areas and drainage systems through washing and stormwater runoff. Byproducts of combustion from jet engines may also have accumulated in the surrounding soil and structures especially in areas used for engine testing and run-up (Jet Blast Deflector Areas). Based on this, the 1995 EBS (JEG 1995) identified the Airfield Operations Area (comprising runways, taxiways and adjacent areas) as a location of concern (LOC). Sampling of this LOC was conducted as a part of stationwide PAH reference-level study to establish reference levels for PAHs in MCAS El Toro surface soils (BNI 1996). The findings of this study are documented in the Final Report, Anthropogenic PAH Reference-Level Study, Marine Corps Air Station El Toro, California (BNI 1996). This study concluded that station-wide PAH reference-level concentrations due to the urban setting did not exceed EPA Region IX residential soil preliminary remediation goals (PRGs). Additionally, the study concluded that the reported results of the dioxin and metals analyses were supportive of unrestricted release of the runway parcels and the Federal Facility Agreement signatories concurred with this finding. Subsequently, the portions of the airfield operations area that were considered LOCs were changed from Environmental Condition of Property (ECP) Type 7 to ECP Type 3 (SWDIV 1998). Subsequent to this, the BCT requested further evaluation of the runways area for PCBs and PAHs.

2003 Soil Sampling:

Based on the review of available documentation, including similar activities at other DOD installations, and in concurrence with the regulatory agencies, sampling along the edges of concrete runways was conducted during 2003. Similarly, impacts under the existing concrete runways where runway extensions were added after the construction of the original runway were also evaluated. Soil samples were collected from a total of 13 areas and analyzed for PCBs, PAHs, and TPH. At each area, two soil samples were collected from boreholes drilled approximately 25 feet apart (designated A and B: e.g. HA7A and HA7B), and composited for laboratory analysis. The results were presented in Appendix E of the Final Environmental Baseline Survey, Former MCAS El Toro, California (Earth Tech 2003). The only analyte exceeding its residential preliminary remediation goal (PRG) was benzo(a)pyrene (160 mg/kg) detected in the soil sample from borehole HA7. Based on the 2003 sampling results, the BCT concurred with no further action for the remainder of the runway area (Earth Tech 2003) except for the area in the vicinity of sample location HA7. In a letter dated April 11, 2003, EPA requested further evaluation in the vicinity of location HA7. In a letter dated April 11, 2003, DTSC recommended that discrete samples be collected from locations HA7A and HA7B and analyzed for PAHs.

2004 Soil Sampling:

To further investigate the area in the vicinity of sample location HA7, this area was designated as Runway Infield Area. The sampling was conducted at five locations in the vicinity of HA7 in accordance with the sampling plan presented to the BCT in January 2004. All five samples were analyzed for PAHs, and three samples were analyzed for TPH. Benzo(a)pyrene concentration exceeded its residential PRG in all the five samples analyzed; benzo(k)fluoranthene and dibenz(a,h)anthracene exceeded their corresponding residential PRGs in three samples; and benzo(b)fluoranthene exceeded its residential PRG in one soil sample.

Issues/Concerns

The 2004 soil sampling results indicate that there is a need to delineate the horizontal extent of soil with concentrations of one or more PAHs exceeding their corresponding residential PRGs.

Investigation Design

Based on the analyses of trends in PAH concentrations and the site conceptual model, which indicates greater probability of the presence of PAHs along the edge of the runway, six additional soil samples are proposed to be collected and analyzed for PAHs and TPH. The six samples will be collected at locations HA19 through HA24 at a depth of 6 inches below ground surface using a hand auger and analyzed for PAH and TPH analyses using EPA SW-846 Methods 8270-SIM and 8015B, respectively.

Source

- Aerial Survey, OHM/SWDIV, 1997
- Borehole Location Survey, Cal Vada, 2003

Preliminary Assessment - Tier 2

Final

Proposed Sampling Locations Runway Infield Area

Environmental Baseline Survey

Date: 02-05	Former MCAS El Toro	
Project No. 54506		

February 2005

Summary Report for PRL RIA
Former MCAS El Toro

Appendix B
Validated Laboratory Analytical Data Report

Sample ID:			LJ299	LJ300	LJ301	LJ302	LJ303
Location ID:			PRLRWY-HA7A	PRLRWY-HA7B	PRLRWY-HA16	PRLRWY-HA17	PRLRWY-HA18
Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL
Sample Depth (ft bgs):			0.5	0.5	0.5	0.5	0.5
Sample Date:			23-Mar-04	23-Mar-04	23-Mar-04	23-Mar-04	23-Mar-04
Parameter	Unit	Analytical Method ¹					
Polyaromatic Hydrocarbon							
2-Methylnaphthalene	µg/kg	PAH-SIM	3 J	3 J	110 U	27 U	27 U
Acenaphthene	µg/kg	PAH-SIM	17 J	9 J	22 J	27 U	2 J
Acenaphthylene	µg/kg	PAH-SIM	140	210	320	28	54
Anthracene	µg/kg	PAH-SIM	150	130	200	20 J	32
Benz(a)anthracene	µg/kg	PAH-SIM	573	390	570	47	93
Benzo(a)pyrene	µg/kg	PAH-SIM	530	480	710	66	130
Benzo(b)fluoranthene	µg/kg	PAH-SIM	490	400	760	78	110
Benzo(g,h,i)perylene	µg/kg	PAH-SIM	200	210	360	40	65
Benzo(k)fluoranthene	µg/kg	PAH-SIM	500	430	610	62	150
Chrysene	µg/kg	PAH-SIM	579	420	660	72	120
Dibenz(a,h)anthracene	µg/kg	PAH-SIM	110	110	170	18 J	30
Fluoranthene	µg/kg	PAH-SIM	921 J	490 J	850	96	140
Fluorene	µg/kg	PAH-SIM	30	14 J	26 J	2 J	3 J
Indeno(1,2,3-Cd)Pyrene	µg/kg	PAH-SIM	210	220	360	40	68
Naphthalene	µg/kg	PAH-SIM	5 J	6 J	31 J	6 J	3 J
Phenanthrene	µg/kg	PAH-SIM	704	210	490	50	55
Pyrene	µg/kg	PAH-SIM	1070	666	1000	100	170
Others							
Moisture	%	ASTM D 2216	7	5.7	7	7.6	6.5
Petroleum Hydrocarbons							
PHC as Diesel Fuel	mg/kg	8015B DRO	--	--	15	3 J	4 J
TPH as Gasoline	mg/kg	8015B GRO	--	--	11 U	11 U	10 U
TPH as Motor Oil	mg/kg	8015B DRO	--	--	110	23	31

Notes:

¹ = Environmental Protection Agency Method unless otherwise noted.

U = Indicates the compound or analyte was analyzed for but was not detected at or above the stated limit.

J = Indicates an estimated value

-- = Not Analyzed

SS = Soil Sample

ASTM = American Society of Testing and Materials

Sample ID:			LJ335	LJ336	LJ337	LJ338	LJ339	LJ340
Location ID:			PRLRIA-HA19	PRLRIA-HA20	PRLRIA-HA21	PRLRIA-HA22	PRLRIA-HA23	PRLRIA-HA24
Sample Type:			SS	SS	SS	SS	SS	SS
Sample Depth (ft bgs):			0.5	0.5	0.5	0.5	0.5	0.5
Sample Date:			15-Oct-04	15-Oct-04	15-Oct-04	15-Oct-04	15-Oct-04	15-Oct-04
Parameter	Unit	Analytical Method ¹						
Polyaromatic Hydrocarbon								
2-Methylnaphthalene	µg/kg	PAH-SIM	100 U	2700 U	26 U	26 U	0.9 J	2 J
Acenaphthene	µg/kg	PAH-SIM	5 J	2700 U	26 U	26 U	26 U	7 J
Acenaphthylene	µg/kg	PAH-SIM	100	340 J	3 J	5 J	7 J	200
Anthracene	µg/kg	PAH-SIM	49 J	150 J	2 J	2 J	3 J	80
Benz(a)anthracene	µg/kg	PAH-SIM	130	460 J	6 J	8 J	7 J	240
Benzo(a)pyrene	µg/kg	PAH-SIM	230	930 J	12 J	15 J	19 J	532
Benzo(b)fluoranthene	µg/kg	PAH-SIM	350	1200 J	19 J	26	27	885
Benzo(g,h,i)perylene	µg/kg	PAH-SIM	74 J	560 J	9 J	8 J	11 J	190
Benzo(k)fluoranthene	µg/kg	PAH-SIM	140	660 J	6 J	8 J	14 J	150
Chrysene	µg/kg	PAH-SIM	160	740 J	11 J	14 J	17 J	300
Dibenz(a,h)anthracene	µg/kg	PAH-SIM	24 J	130 J	2 J	2 J	3 J	66
Fluoranthene	µg/kg	PAH-SIM	310	1300 J	21 J	25 J	32	545
Fluorene	µg/kg	PAH-SIM	7 J	2700 U	26 U	26 U	26 U	12 J
Indeno(1,2,3-Cd)Pyrene	µg/kg	PAH-SIM	80 J	530 J	8 J	8 J	10 J	210
Naphthalene	µg/kg	PAH-SIM	5 J	2700 U	26 U	1 J	2 J	6 J
Phenanthrene	µg/kg	PAH-SIM	130	470 J	9 J	9 J	14 J	170
Pyrene	µg/kg	PAH-SIM	310	1200 J	20 J	23 J	30	629
Others								
Moisture	%	ASTM D 2216	1.9	45.4	2.2	3	2	2.6
Petroleum Hydrocarbons								
PHC as Diesel Fuel	mg/kg	8015B DRO	6 J	84	2 J	3 J	10 U	9 J
TPH as Gasoline	mg/kg	8015B GRO	--	--	--	--	--	--
TPH as Motor Oil	mg/kg	8015B DRO	110	760	14	20	13	47

Notes:

¹ = Environmental Protection Agency Method unless otherwise noted.

U = Indicates the compound or analyte was analyzed for but was not detected at or above the stated limit.

J = Indicates an estimated value

-- = Not Analyzed

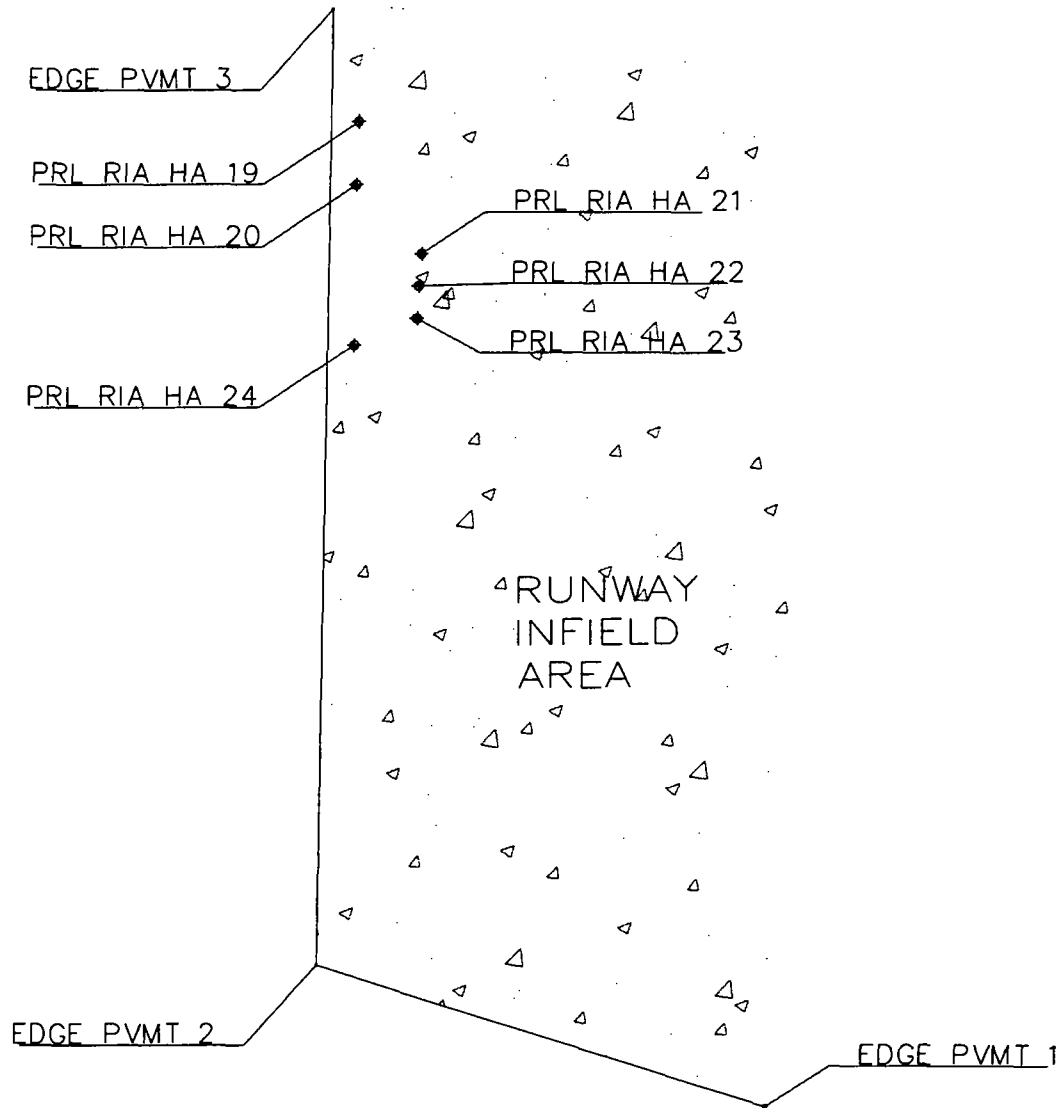
SS = Soil Sample

ASTM = American Society of Testing and Materials

February 2005

Summary Report for PRL RIA
Former MCAS El Toro

Appendix C Land Surveying Data



PRL AND NOTABLE FEATURES LOCATIONS

STATION	NORTHING	EASTING	ELEVATION
EDGE PVMT 1	2195570.35	6112587.14	374.36
EDGE PVMT 2	2195681.45	6112240.36	369.88
EDGE PVMT 3	2196426.46	6112249.24	369.89
PRL RIA HA 19	2196338.26	6112269.83	369.83
PRL RIA HA 20	2196289.15	6112268.28	369.78
PRL RIA HA 21	2196235.39	6112319.40	368.94
PRL RIA HA 22	2196210.35	6112317.66	368.77
PRL RIA HA 23	2196185.11	6112316.27	369.27
PRL RIA HA 24	2196164.18	6112266.86	369.71



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www.dcacivileng.com

POTENTIAL RELEASE LOCATION SKETCH

SCALE: 1" = 100' DATE: 02-16

BY: JCL JOB NO.: 04-1058-2227.00

Attachment 12
Summary Report
PRL 114



Summary Report for PRL 114, Environmental Baseline Survey

**Former Marine Corps Air Station,
El Toro, California**

February 2005

Prepared for:

**Base Realignment and Closure
Program Management Office West
1230 Columbia Street, Suite 1100
San Diego, CA 92101**

Prepared by:

**Earth Tech, Inc.
841 Bishop Street, Suite 500
Honolulu, HI 96813-3920**

Prepared under:

**Comprehensive Long-Term Environmental Action Navy
Contract Number N62742-94-D-0048, CTO 0104**

CONTENTS

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APPENDICES

A Sampling Design Specification Sheet – PRL 114	
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ACRONYMS AND ABBREVIATIONS

APHO	aerial photograph anomaly
MCAS	Marine Corps Air Station
OCHCA	Orange County Health Care Agency
OWS	oil/water separator
PCB	polychlorinated biphenyl
PRL	potential release location
RWQCB	Regional Water Quality Control Board
UST	underground storage tank
VSI	visual site inspection

1. BACKGROUND

Potential Release Location (PRL) 114 is associated with Building 114 and is located in the northeastern portion of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). The building was listed as "Squadron Headquarters" in the 1948, 1949, 1950, and 1954 station lists and as "Squadron Administration" in the 1958 list. The facility description was "Maintenance Hangar/Full Pressure Suit Facility" in the 1973 list and "Maintenance Hangar Space" in the 1997 list. Figure 2 shows the plan of Building 114 and the surrounding area.

Five locations of concern were associated with this site. Polychlorinated biphenyl (PCB) T14 was a transformer that was replaced. Underground storage tank (UST) 114A was a 1,500-gallon, fuel-oil tank, and UST 114B was a 560-gallon, diesel tank. Both tanks were removed, and the sites were closed by the Regional Water Quality Control Board (RWQCB) as stated in letters dated 11 April 1997 and 12 April 1999, respectively. Building 114 is adjacent to a former wash rack. The wash rack was evaluated and granted no further action status in 1996 (Geofon 2000). The tank (UST 763B) and oil/water separator (OWS 763A) associated with the wash rack were removed and closed by the Orange County Health Care Agency (OCHCA) as stated in a letter dated 26 July 2000. Aerial photograph anomaly (APHO) 100 was identified on a 1967 photograph, in which liquid was reported to be flowing from Facility 114. No further action was recommended for APHO 100 based on a site inspection. Concurrence on this recommendation was obtained from California Department of Toxic Substances Control as stated in a letter dated 25 June 2003 and from the RWQCB as stated in a letter dated 14 August 2003.

UST 114C, a 600-gallon, heating-oil tank, was closed in place with approval from the OCHCA as stated in a letter dated 25 May 2004.

1.1 ISSUES AND CONCERNS

The following issues and concerns associated with this PRL were identified through the visual site inspection (VSI) and records review conducted in 2002 and 2004:

- The boiler room and a room with a transformer and air compressor are located in the southern portion of Building 114. No staining or other evidence of release was observed during the 2002 VSI of Building 114 and its vicinity. During a subsequent VSI (Earth Tech 2002, 2004), superficial staining was observed in the boiler room; however, the concrete floor on which the stains were found was observed to be in good condition. There was no evidence of release to the environment.
- The former wash rack was identified as a location of potential release during a review of historical drawings for Building 114. However, this location has been addressed by the investigations and closings of UST763B and OWS763A.

2. CONCLUSIONS AND RECOMMENDATIONS

No significant staining or other evidence of release was observed at Building 114 and its vicinity. The stains observed in the boiler room were assessed to be superficial, and no route of release was identified. The locations of potential release in the vicinity of Building 114, including the wash rack, USTs, OWS, and aerial photograph anomaly, have been addressed by previous investigations and closed by regulatory agencies. Therefore, no further investigation is recommended for PRL 114.

3. REFERENCES

Earth Tech, Inc. 2002. *Visual Site Inspection, Environmental Baseline Survey, Former MCAS El Toro, California.*

———. 2004. *Visual Site Inspection. Environmental Baseline Survey, Former MCAS El Toro, California.*

Geofon, Inc. (Geofon). 2000. *Underground Storage Tank Removal Report, OWS 763A and UST 763B, Marine Corps Air Station (MCAS) El Toro, California.* June 12.

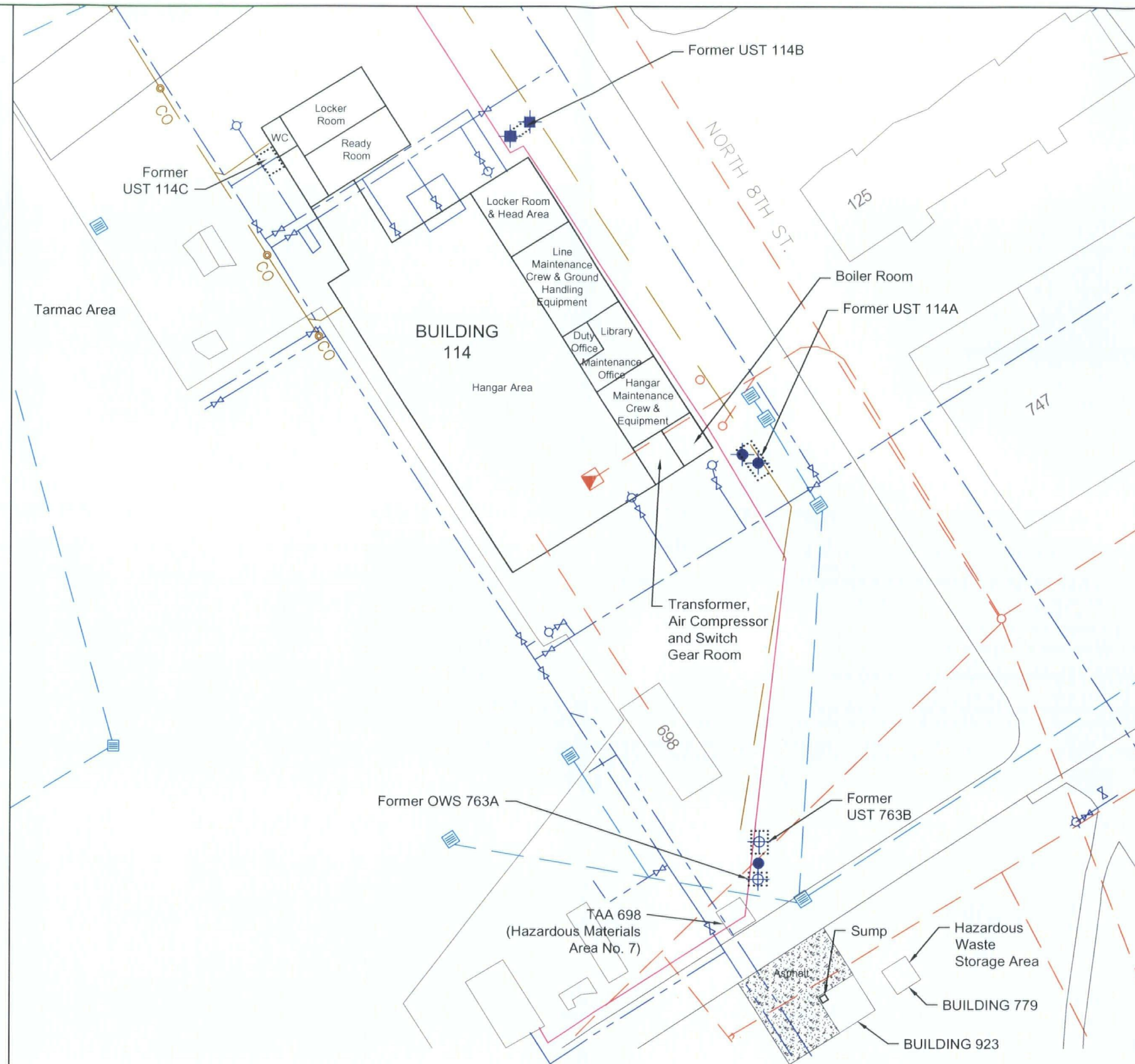
Figures



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Front of Hanger
(Facing Southeast)



LEGEND:

- Sanitary Sewer
- Water Line
- Natural Gas Line
- Electrical Line
- Storm Sewer

Clean Out

Manhole

Catch Basin

Transformer

Fire Hydrant

Water Valve

WC Restroom

Approximate Soil Sample Location
(Geofon, 2000)(Sample Depth: 7-10 ft bgs;
Analytes: TPH, VOCs)

Approximate Soil Boring Location
(OHM, 1998)(Sample Depths: 10 - 50 ft
bgs; Analytes: TPH, BTEX, MTBE)

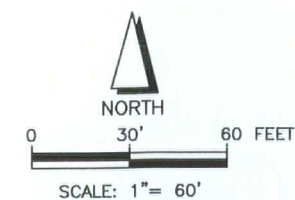
Approximate Soil Sample Location
(NFECSW SDIEGO, 1993)(Sample Depth:
5-25 ft bgs; Analytes: TPH, VOCs)

Approximate Soil Sample Locations
(NFECSW SDIEGO, 1991)(Sample Depth:
Below the Tank; Analytes: TPH, BTEX)

REFERENCES:

1. Geofon, Inc (Geofon). 2000. Underground Storage Tank Removal Report, OWS 763A and UST 763B, Marine Corps Air Station (MCAS) El Toro, California. June 12.
2. OHM Remediation Services, Corp (OHM). 1998. Site Assessment Report, Former Underground Storage Tank Site 114B, Marine Corps Air Station El Toro, California. June 15.
3. Southwest Division, Naval Facilities Engineering Command (NFECSW SDIEGO). 1991. Marine Corps Air Station El Toro, California, Preliminary Site Assessment/Underground Storage Tanks (UST) Removal Tank Closure Report. December 18.
4. NFECSW SDIEGO. 1993. Marine Corps Air Station El Toro, California, Installation Restoration Program, Final Resource Conservation Recovery Act (RCRA), Facility Assessment Report, Volume I. San Diego. 16 July.

Note: Features and Interior Layout are Approximate and
May Not be to Scale



Summary Report

Site Plan PRL 114

Environmental Baseline Survey

Date: 02-05

Former MCAS El Toro

Project No.

54506

EarthTech
A Tyco International Ltd. Company

Figure

2

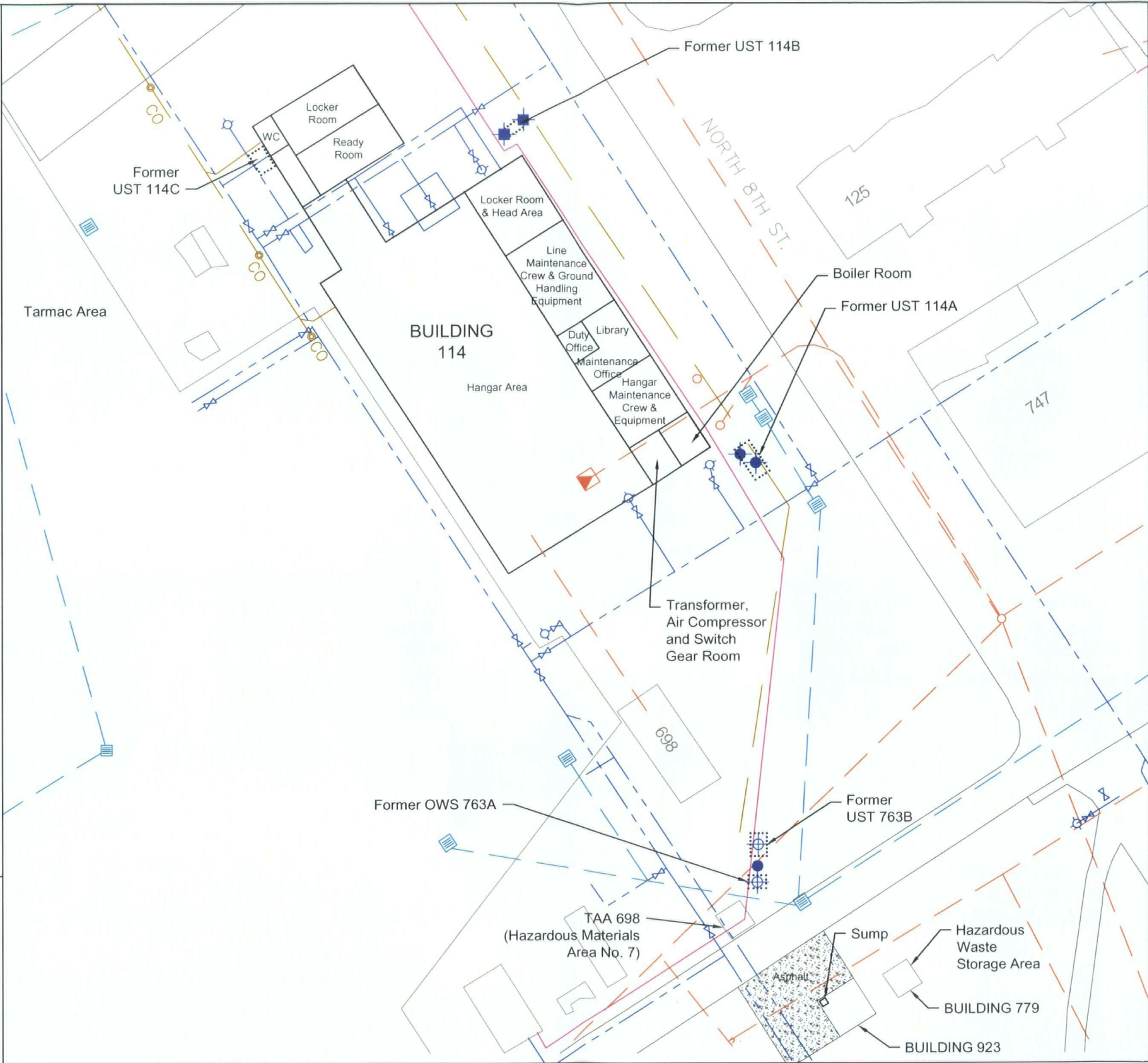
February 2005

Summary Report for PRL 114
Former MCAS El Toro

Appendix A
Sampling Design Specification Sheet – PRL 114



Front of Hangar
(Facing Southeast)

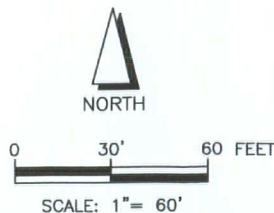


LEGEND:

- Sanitary Sewer
- Water Line
- Natural Gas Line
- Electrical Line
- Storm Sewer
- Clean Out
- Manhole
- Catch Basin
- Transformer
- Fire Hydrant
- Water Valve
- WC Restroom

- Approximate Soil Sample Location (Geofon, 2000)(Sample Depth: 7-10 ft bgs; Analytes: TPH, VOCs)
- Approximate Soil Boring Location (OHM, 1998)(Sample Depths: 10 - 50 ft bgs; Analytes: TPH, BTEX, MTBE)
- Approximate Soil Sample Location (NFECSW SDIEGO, 1993)(Sample Depth: 5-25 ft bgs; Analytes: TPH, VOCs)
- Approximate Soil Sample Locations (NFECSW SDIEGO, 1991)(Sample Depth: Below the Tank; Analytes: TPH, BTEX)

Note: Features and Interior Layout are Approximate and May Not be to Scale



Background

The building was listed as Squadron Headquarters in the 1948, 1949, 1950, and 1954 station lists and as Squadron Administration in the 1958 list. The facility description was Maintenance Hangar/Full Pressure Suit Facility in the 1973 list and Maintenance Hangar Space in the 1997 list. Five locations of concern (LOCs) were associated with this site. PCB T14 was a transformer that was replaced. UST 114A was a 1,500-gallon, underground fuel-oil storage tank and UST 114B was a 560-gallon, underground diesel storage tank. Both were removed and the sites closed by the Regional Water Quality Control Board (RWQCB) in letters dated 11 April 1997 and 12 April 1999, respectively. Building 114 is adjacent to a former wash rack. The wash rack was evaluated and granted no further action status in 1996 (4). The tank (UST 763B) and oil-water separator (OWS 763A) associated with the wash rack were removed and closed by the Orange County Health Care Agency (OCHCA) in a letter dated 26 July 2000. APHO 100 was identified on a 1967 photograph in which liquid was reported to be flowing from Facility 114. No further action was recommended for APHO 100 based on a site inspection. Concurrence on this recommendation was obtained from DTSC in a letter dated 25 June 2003 and from the RWQCB in a letter dated 14 August 2003. UST 114C is a 600-gallon, heating-oil, underground storage tank that was closed in place with approval from the OCHCA in a letter dated 25 May 2004.

Issues/Concerns

1. A boiler room, and a room with transformer and air compressor are located in the southern portion of Building 114. No staining or other evidence of release was observed during the 2002 VSI of Building 114 and its vicinity (7). In a subsequent VSI (2004), superficial staining was observed in the boiler room; however, the concrete floor on which the stains were found was observed to be in good condition.
2. One location of potential release was identified during the review of historical drawings for Building 114 and consisted of the former wash rack, which has been already addressed by investigations of LOCs in the vicinity of the building.

Conclusion

No significant staining or other evidence of release was observed at Building 114 and its vicinity. The stains observed in the boiler room were assessed to be superficial and no route of release identified. The locations of potential release in the vicinity of Building 114, including the wash rack, USTs, OWS, and aerial photograph anomaly have been addressed by previous investigations and closed by regulatory agencies. Therefore, no further investigation is recommended for PRL 114.

References

1. Drawing: Hazardous Waste Storage Areas, MCAS, El Toro, Plan of Pad Sites # 4, 6, 9, 10, 11, 12. # 69950. 1/17/66.
2. Drawing: US Marine Corps Air Station El Toro (Santa Ana) California. Aircraft Maintenance Hangers, First Floor Plan. Y & D Drawing# 1066699. June 1964.
3. Drawing: Plan and Detail Site # 13, Industrial Waste Collection Improvements, P-235. NAVFAC # 6147728. 15 October 1981.
4. Geofon, Inc (Geofon). 2000. *Underground Storage Tank Removal Report, OWS 763A and UST 763B, Marine Corps Air Station (MCAS) El Toro, California*. June 12.
5. Southwest Division, Naval Facilities Engineering Command (NFECSW SDIEGO). 1991. *Marine Corps Air Station El Toro, California, Preliminary Site Assessment/Underground Storage Tanks (UST) Removal Tank Closure Report*. December 18.
6. NFECSW SDIEGO. 1993. *Marine Corps Air Station El Toro, California, Installation Restoration Program, Final Resource Conservation Recovery Act (RCRA), Facility Assessment Report, Volume I*. San Diego. 16 July.
7. OHM Remediation Services, Corp (OHM). 1998. *Site Assessment Report, Former Underground Storage Tank Site 114B, Marine Corps Air Station El Toro, California*. June 15.
8. Visual Site Inspection. 2002 and 2004.

Preliminary Assessment		Final
Proposed Sampling Locations PRL 114		
Environmental Baseline Survey		
Date: 02-05	Former MCAS El Toro	
Project No. 54506	 EarthTech A Tyco International Ltd. Company	

Attachment 13
Summary Report
PRL 245/246



Summary Report for PRL 245/246, Environmental Baseline Survey

**Former Marine Corps Air Station,
El Toro, California**

February 2005

Prepared for:
**Base Realignment and Closure
Program Management Office West
1230 Columbia Street, Suite 1100
San Diego, CA 92101**

Prepared by:
**Earth Tech, Inc.
841 Bishop Street, Suite 500
Honolulu, HI 96813-3920**

Prepared under:
**Comprehensive Long-Term Environmental Action Navy
Contract Number N62742-94-D-0048, CTO 0104**

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APPENDICES

A Sampling Design Specification Sheet – PRL 245/246	
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ACRONYMS AND ABBREVIATIONS

AST	aboveground storage tank
BNI	Bechtel National Inc.
IRP	Installation Restoration Program
LOC	location of concern
MCAS	Marine Corps Air Station
NFEC SW SDIEGO	Naval Facilities Engineering Command, Southwest
PRL	potential release location
VSI	visual site inspection

1. BACKGROUND

Potential Release Location (PRL) 245/246 is associated with Building 245 and former Building 246 and is located in the western portion of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). Building 245 was listed as "Squadron Storehouse" in the 1948, 1949, and 1950 station lists, as "Storehouse" in 1954, as "Squadron Electronics and Camera Shop" in 1958, as "Storage (Marine Corps)" in 1973, and as "Storage Air/Ground" in 1997, which is the last known description. The building housed the Defense Reutilization and Marketing Office. Figure 2 shows the plan of Building 245 and the surrounding area.

Building 246 was listed as "Salvage Office" in the 1948 and 1949 station lists, and as "Salvage Building" in the 1950 and 1954 station lists. The facility description was "Marine Exchange Storage" in the 1958 list and as "Location Exchange" in the 1973 list, which is the last known description. The building has since been demolished.

Two locations of concern (LOCs) are associated with this site. Aboveground storage tank (AST) 245 was a 3,200-gallon propane tank. AST 245 was removed (NFECSW SDIEGO 2000) and the site closed by the Regional Water Quality Control Board as stated in a letter dated 28 August 2000.

Installation Restoration Program (IRP) Site 14, Unit 1 comprises a former battery acid disposal area associated with Building 245. Sampling of soils was conducted as part of a Phase I remedial investigation (BNI 1995). Based on the results, no further action was recommended. A record of decision for no further action for IRP Site 14 was signed on 26 June 2001 (Earth Tech 2003).

1.1 ISSUES AND CONCERNS

The following issues and concerns associated with this PRL were identified through the visual site inspection (VSI) and records review conducted in 2002 and 2004:

- A stain was observed in the northern portion of Building 245 and was assessed to be a likely result of rainwater infiltration from a broken window (Earth Tech 2002, 2004). No other stains or cracks indicating a potential release to the environment were observed on the floor of Building 245. The floor stain inside Building 245 identified during the VSI was assessed not to be associated with releases of hazardous substances or pollutants
- Disturbed ground and vegetation was observed south of Building 245, at the approximate location of former Building 246. Inert debris, including gravel and sand, was observed in this area. Additionally, a 2-by-3-foot patch of asphalt-like material was observed in the area (Earth Tech 2002, 2004). The nature of debris in the area of former Building 246 was inert; and no staining was identified in the area.

2. CONCLUSIONS AND RECOMMENDATIONS

All LOCs associated with this PRL have been investigated and the sites closed by regulatory agencies. The issues and concerns identified during the environmental baseline survey (EBS) were assessed not to be sources of releases of contaminants. Based on these findings, no further investigation is recommended for PRL 245/246.

3. REFERENCES

Earth Tech, Inc. 2002. *Visual Site Inspection, Environmental Baseline Survey, Former MCAS El Toro, California.*

———. 2004. *Visual Site Inspection. Environmental Baseline Survey, Former MCAS El Toro, California.*

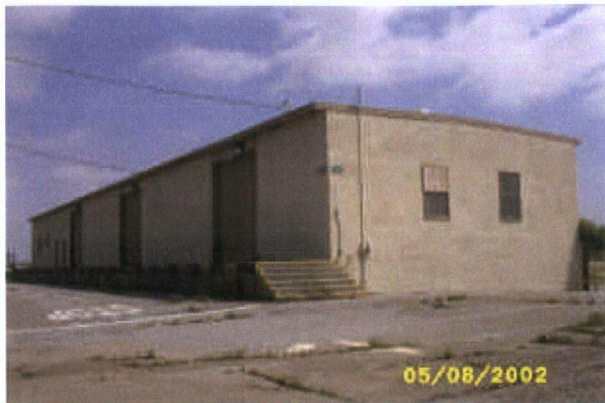
Southwest Division, Naval Facilities Engineering Command (NFECSW SDIEGO). 2000. *Summary Report, Former AST Sites 245 and 439, Marine Corps Air Station, El Toro, California.* San Diego. July.

Bechtel National, Inc. (BNI). 1995. *Final Field Sampling Plan Phase II Remedial Investigation/Feasibility Study, Marine Corps Air Station, El Toro, California.* San Diego, CA. August.

Figures



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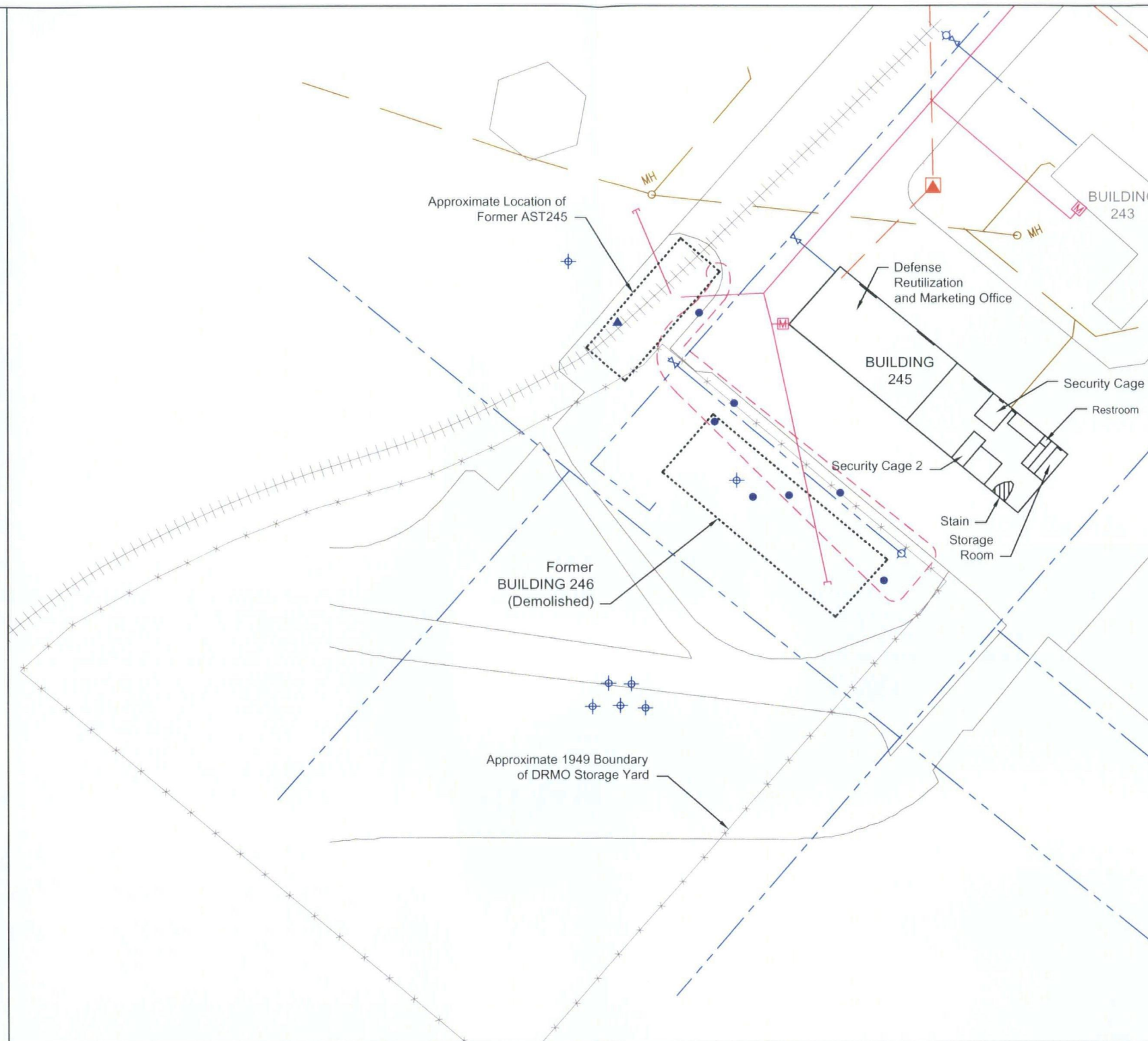
North Side of Building 245 (Facing Southeast)



Disturbed Ground and Vegetation at Location of Former Building 246 (Facing Northeast)



Stain in Building 245 (Facing South)

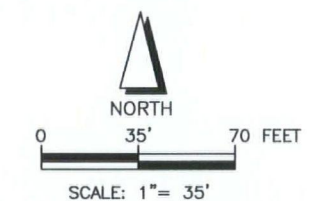


LEGEND:

- Sanitary Sewer
- Water Line
- Natural Gas Line
- Electrical Line
- Former Rail Line
- Former Fence
- MH Manhole
- M Gas Meter
- Transformer
- Fire Hydrant
- Water Valve
- IRP Site 14, Unit 1 Boundary
- Phase I Monitoring Wells (Jacobs, 1993)
(Analytes: VOCs, SVOCs, TPH, Metals, Pesticides, PCB)
- Phase I Sediment Samples (Jacobs, 1993)
(Analytes: VOCs, SVOCs, TPH, Metals)
- Phase I Surface and Near Surface Soil Samples (Jacobs, 1993)
(Sample Depths: 0-10 ft bgs; Analytes: VOCs, SVOCs, TPH, Metals)

REFERENCES:

1. Jacobs Engineering Group Inc. (Jacobs). 1993. Installation Restoration Program, Phase I Remedial Investigation, Draft Technical Memorandum, Marine Corps Air Station, El Toro, California.



Note: Features and Interior Layout are Approximate and May Not be to Scale

Summary Report

**Site Plan
PRL 245**

Environmental Baseline Survey

Date: 02-05

Former MCAS El Toro

Project No.

54506

EarthTech
A Tyco International Ltd. Company

Figure

2

February 2005

Summary Report for PRL 245/246
Former MCAS El Toro

Appendix A
Sampling Design Specification Sheet – PRL 245/246

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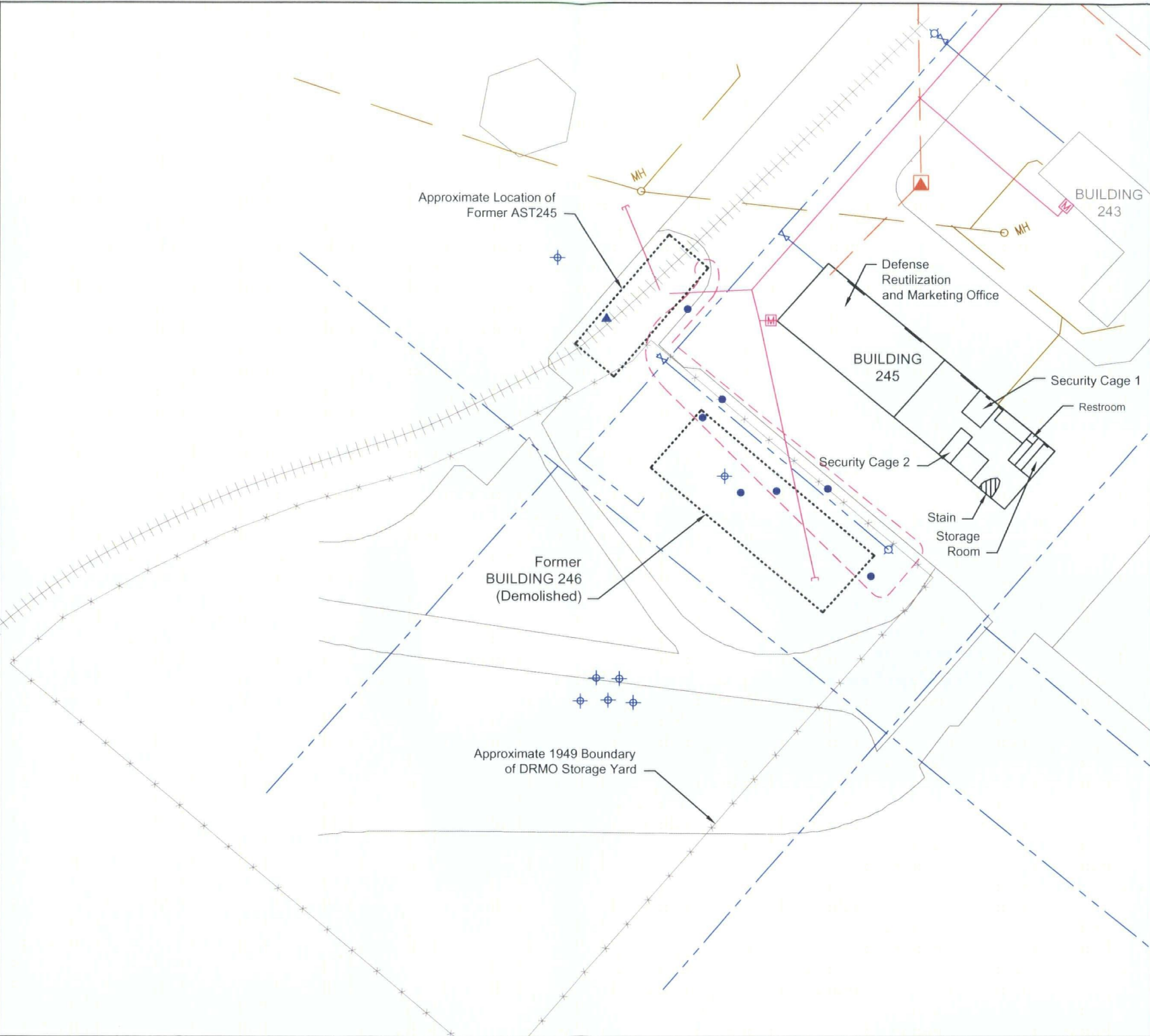
North Side of Building 245 (Facing Southeast)



Disturbed Ground and Vegetation at Location of Former Building 246 (Facing Northeast)



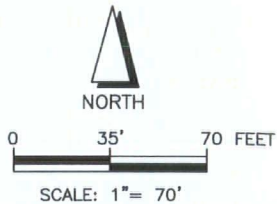
Stain in Building 245 (Facing South)



LEGEND:

- | | | |
|------------------------|----------------|--|
| — Sanitary Sewer | ○ MH Manhole | --- IRP Site 14, Unit 1 Boundary |
| - - - Water Line | □ M Gas Meter | ⊕ Phase I Monitoring Wells (Jacobs, 1993)
(Analytes: VOCs, SVOCs, TPH, Metals, Pesticides, PCB) |
| — Natural Gas Line | ▲ Transformer | ▲ Phase I Sediment Samples (Jacobs, 1993)
(Analytes: VOCs, SVOCs, TPH, Metals) |
| — Electrical Line | ⊙ Fire Hydrant | ● Phase I Surface and Near Surface Soil Samples (Jacobs, 1993)
(Sample Depths: 0-10 ft bgs; Analytes: VOCs, SVOCs, TPH, Metals) |
| ++++ Former Rail Line | ⊗ Water Valve | |
| - x - x - Former Fence | | |

Note: Features and Interior Layout are Approximate and May Not be to Scale



Background:
Building 245 was listed as Squadron Storehouse (1948 through 1950), Storehouse (1954), Squadron Electronics and Camera Shop (1958), Storage (Marine Corps) in 1973, and Storage Air/Ground in 1997. The last known description was Storage/Air Ground. The building housed the Defense Reutilization and Marketing Office (DRMO).
Building 246 was listed as Salvage Office in the 1948 and 1949 station lists, and as Salvage Building in the 1950 and 1954 station lists. The facility description was Marine Exchange Storage in the 1958 list and as Location Exchange in the 1973 list. The last known description was Location Exchange. The building has since been demolished.
Two locations of concern are associated with this site. AST 245 was a horizontal, propane storage tank with a capacity of 3,200 gallons. The tank was removed (1) and the site closed by the Regional Water Quality Control Board in August 2000.
IRP Site 14, Unit 1 comprises a former battery acid disposal area associated with Building 245. Sampling of soils was conducted as part of a Phase I remedial investigation (2). Based on the results, no further action was recommended. A record of decision for no further action for IRP Site 14 was signed on 26 June 2001 (3).

Issues/Concerns
1. A stain was observed in the northern portion of Building 245 and is likely a result of rainwater infiltration from a broken window (4). No other stains or cracks were observed on the floor of Building 245. No further investigation is recommended.
2. Disturbed ground and vegetation was observed south of Building 245, at the approximate location of former Building 246. Inert debris including gravel and sand were observed in this area. Additionally, a patch of asphalt-like material with dimensions 3 feet by 2 feet was observed in the area (4). Since the nature of debris identified is inert and no staining was identified in the area, no further investigation is recommended.

Conclusion
The floor stain and disturbed ground identified during the VSI were subsequently assessed not to be associated with releases of hazardous substances or pollutants. The area south of Building 245 was investigated as part of IRP Site 14, Unit 1. No further investigation is recommended for PRL 245/246.

References
1. Southwest Division, Naval Facilities Engineering Command (NFEC SW SDIEGO). 2000. *Summary Report, Former AST Sites 245 and 439, Marine Corps Air Station, El Toro, California*. San Diego. July.
2. Bechtel National, Inc. (BNI). 1995. *Final Field Sampling Plan Phase II Remedial Investigation/Feasibility Study, Marine Corps Air Station, El Toro, California*. San Diego. August.
3. Earth Tech, Inc. 2003. *Final Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. Honolulu, HI. September.
4. Visual Site Inspection. 2002 and 2004.
5. Jacobs Engineering Group Inc. (Jacobs). 1993. *Installation Restoration Program, Phase I Remedial Investigation, Draft Technical Memorandum, Marine Corps Air Station, El Toro, California*.

Preliminary Assessment		Final
Proposed Sampling Locations PRL 245/246		
Environmental Baseline Survey		
Date: 02-05	Former MCAS El Toro	
Project No. 54506	 A Tyco International Ltd. Company	

Attachment 14
Summary Report
PRL 658



Summary Report for PRL 658, Environmental Baseline Survey

**Former Marine Corps Air Station,
El Toro, California**

February 2005

Prepared for:

**Base Realignment and Closure
Program Management Office West
1230 Columbia Street, Suite 1100
San Diego, CA 92101**

Prepared by:

**Earth Tech, Inc.
841 Bishop Street, Suite 500
Honolulu, HI 96813-3920**

Prepared under:

**Comprehensive Long-Term Environmental Action Navy
Contract Number N62742-94-D-0048, CTO 0104**

CONTENTS

ACRONYMS AND ABBREVIATIONS	v
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1.1 ISSUES and CONCERNS	7
2. CONCLUSIONS AND RECOMMENDATIONS	7
3. REFERENCES	8

FIGURES

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Figure 2: Site Plan – PRL 658	13

APPENDICES

A Sampling Design Specification Sheet – PRL 658	
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ACRONYMS AND ABBREVIATIONS

BNI	Bechtel National Inc.
EBS	environmental baseline survey
IRP	Installation Restoration Program
MCAS	Marine Corps Air Station
OWS	oil/water separator
PCB	polychlorinated biphenyl
PRL	potential release location
RWQCB	Regional Water Quality Control Board (Santa Ana Region)
SWMU/AOC	solid waste management unit/area of concern
TAA	temporary accumulation area
UST	underground storage tank
VSI	visual site inspection

1. BACKGROUND

Potential Release Location (PRL) 658 is associated with Building 658 and is located in the northeastern portion of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). Building 658 was listed as "Engine Test Cell" in the 1973 and 1997 station lists, which is the last known description. In 1989, Regional Water Quality Control Board (RWQCB) requested that the former jet engine cells be investigated. Concerns included the jet fuel piping in and beneath the floor, and oil-containing equipment possibly used inside the test cell facilities. Figure 2 shows the plan of Building 658 and the surrounding area.

Nine locations of concern were associated with this site. Oil/water separator (OWS) 658C, with a 400-gallon capacity, was closed in place, with concurrence from the RWQCB as stated in a letter dated 8 January 2003. OWS 658D, a 1,750-gallon OWS, was closed in place with concurrence from the RWQCB as stated in a letter dated 8 January 2003. OWS 658E was a 10-gallon OWS that was removed in November 2002; the site was closed by the RWQCB as stated in a letter dated 7 March 2003. Aboveground storage tank (AST) 658, a 200-gallon, ferrocene tank, was removed and the site closed by the California Department of Toxic Substances Control (DTSC) as stated in a letter dated 10 March 2003. Installation Restoration Program (IRP) Site 4 comprises a ferrocene spill area southeast of Building 658. Sampling of soils was conducted as part of a Phase I remedial investigation (BNI 1995). Based on the results, no further action was recommended. A record of decision for no further action for IRP Site 4 was signed on 30 September 1997 (Earth Tech 2003).

Polychlorinated biphenyl (PCB) T89 was a transformer that was replaced by a non-PCB transformer. The 1994 field survey indicated no evidence of release. No releases of PCBs were identified through the records search or through the visual site inspections (VSIs) conducted for the 2003 environmental baseline survey (EBS) (Earth Tech 2002, 2004). Temporary accumulation area (TAA) 658 (solid waste management unit/area of concern [SWMU/AOC] 171) was a less-than-90-day area. Soil sampling was conducted at TAA 658 in 1998 (OHM) and 2003 (Shaw), and the closure report was under review by the Base Realignment and Closure (BRAC) Cleanup Team (BCT) at the time of writing this report. Underground storage tanks (USTs) 658A and 658B were 10,000-gallon, JP-5, USTs, which were removed on 26 January 1998. The Orange County Health Care Agency (OCHCA) closed the two UST sites as stated in a letter dated 24 April 1998.

The Department of the Navy is currently investigating the JP-5 underground pipeline located near Building 658. A groundwater monitoring well was installed and several soil borings were advanced in conjunction with the investigation.

1.1 ISSUES AND CONCERNS

The following issues and concerns associated with this PRL were identified through the VSI and records review conducted in 2002 and 2004 in support of the EBS (Earth Tech 2003):

- Activities undertaken at the facility may have resulted in release of hazardous substances or pollutants (e.g., jet fuel) to the ground or sewer through subsurface piping associated with the facility.

2. CONCLUSIONS AND RECOMMENDATIONS

No investigation activities are proposed under this program because of previously completed investigations and ongoing evaluation of the JP-5 fuel line.

3. REFERENCES

Bechtel National, Inc. (BNI). 1995. *Final Field Sampling Plan Phase II Remedial Investigation/Feasibility Study, Marine Corps Air Station, El Toro, California*. San Diego, CA. August.

Earth Tech, Inc. 2002. *Visual Site Inspection, Environmental Baseline Survey, Former MCAS El Toro, California*.

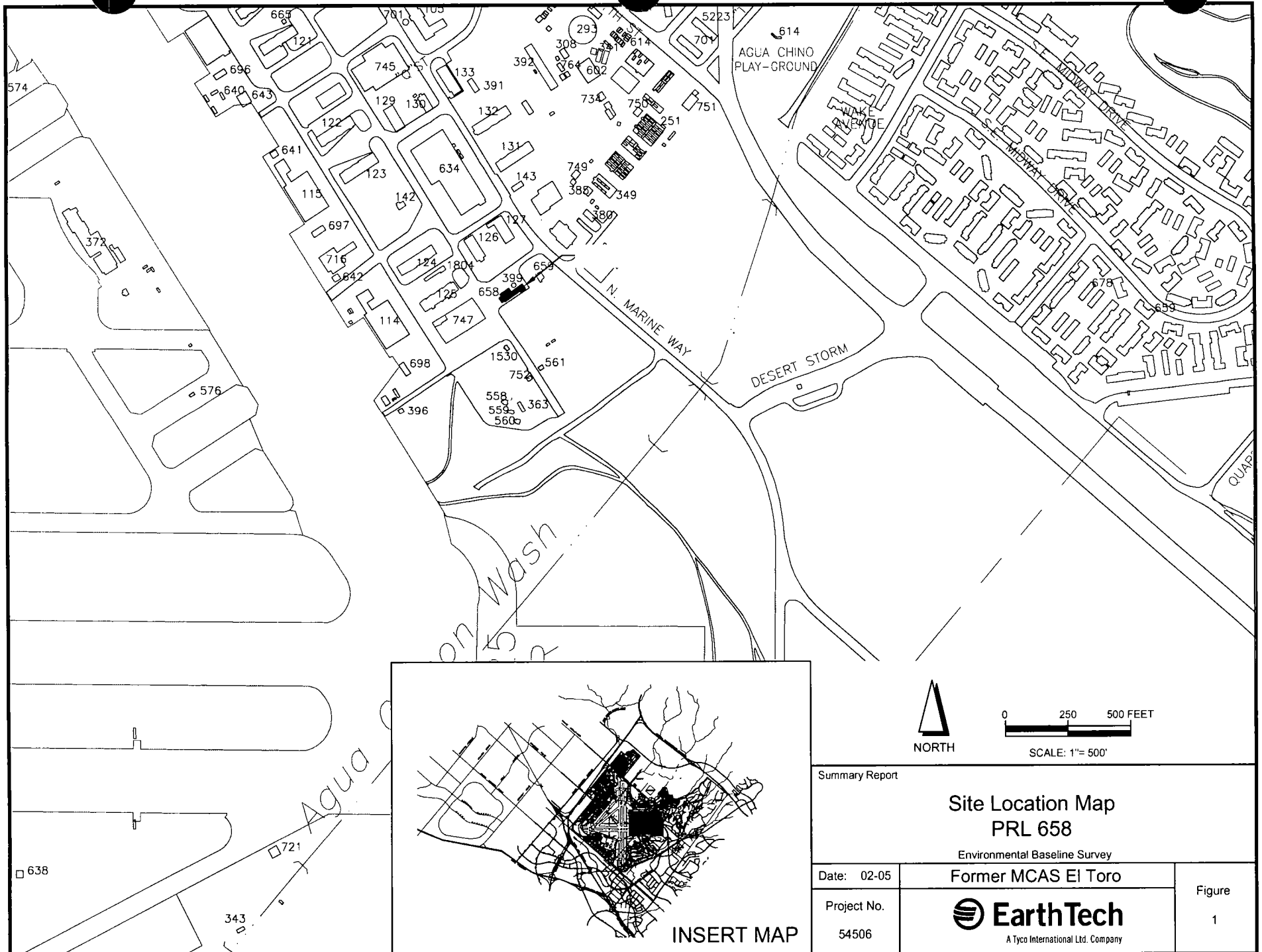
_____. 2003. *Final Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. Honolulu, HI. September.

_____. 2004. *Visual Site Inspection. Environmental Baseline Survey, Former MCAS El Toro, California*.

OHM Remediation Services Corporation (OHM). 1998. *Tank Closure Report, USTs 658A and 658B, MCAS El Toro, California*. 27 March.

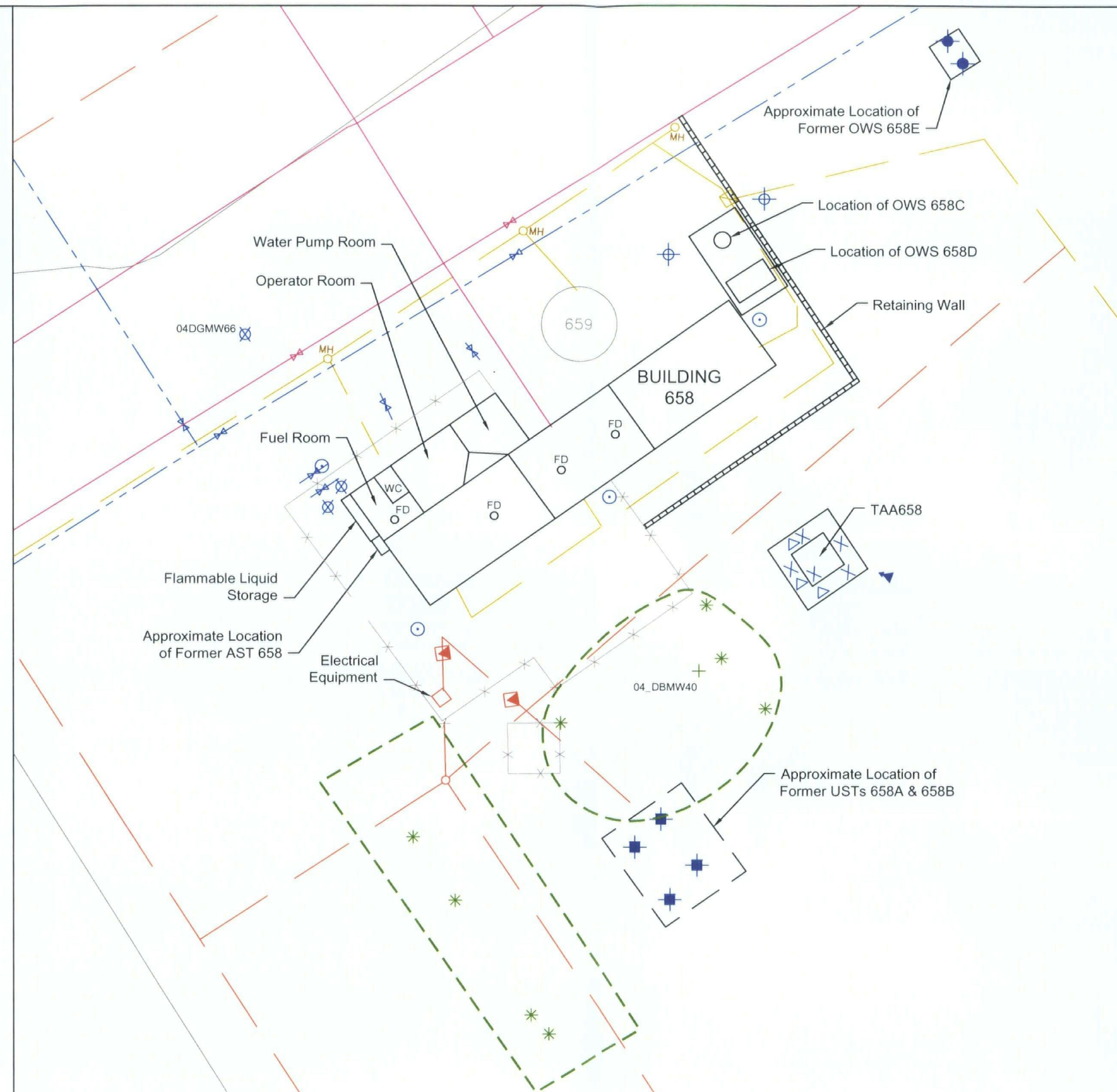
Shaw Environmental, Inc. (Shaw). 2003. *Addendum to Closure Report, Former Temporary Accumulation Area 658, Former Marine Corps Air Station El Toro, California*. 27 May.

Figures



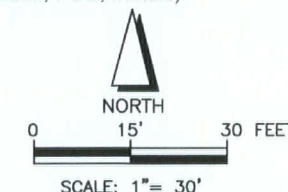


Southside of Building 658
(Facing North)



LEGEND:

- Sanitary Sewer
- Water Line
- Natural Gas Line
- Electrical Line
- HA1 ● Proposed Soil Sample Location
- MH Manhole
- ▲ Transformer
- ⋈ Water Valve
- WC Restroom
- FD Floor Drain
- IRP Site 4 Boundary
- + Phase I Monitoring Well (Jacobs, 1993)
Analytes: VOCs, SVOCs, Herbicides, Pesticides, PCB, Cyanide, Gross Beta)
- * Phase I Surface and Near Surface
Soil Sample Locations (Jacobs, 1993)
(Sample Depths: 0 - 4 ft bgs; Analytes: VOCs, SVOCs, Metals, Pesticides, PCB, TPH)
- Soil Borings (Observed During 2004 VSI)
- ⊗ Monitoring Well (Observed During 2004 VSI)
- × Approximate Soil Boring Locations (OHM 1999)
(Sample Depths: 1.5 - 3 ft bgs; Analytes: TPH, Pesticides, VOCs, SVOCs, Metals, Cyanide, pH)
- △ Approximate Soil Boring Locations (Shaw, 2003)
(Sample Depths: 3 ft bgs; Analytes: TPH, Pesticides, VOCs, SVOCs, Metals)
- ⊕ Approximate Soil Boring Location (NFECSW SDIEGO, 1998)
(Sample Depths: 11.5 - 41.5 ft bgs; Analytes: TPH, BTEX, MTBE)
- Approximate Soil Boring Locations (Geofon, 2003)
(Sample Depths: 5 ft bgs; Analytes: TPH, BTEX, VOCs)
- Approximate Sample Boring Locations (OHM, 1998)
(Sample Depths: 14.5 ft bgs; Analytes: TPH, BTEX)
- ▲ Approximate Angle Boring Location (NFECSW SDIEGO 1993)
(Sample Depth: 10 - 60 feet bgs; Analytes: TPH, VOCs, SVOCs, Pesticides, PCB, Metals)



Note: Features and Interior Layout are Approximate and May Not be to Scale

REFERENCES:

1. Geofon, Inc. (Geofon). 2003. *Information Package, Removal and Disposal of OWS 658E at MCAS El Toro, California*. 22 January.
2. Jacobs Engineering Group Inc. (Jacobs). 1993. *Installation Restoration Program, Phase I Remedial Investigation, Draft Technical Memorandum, Marine Corps Air Station, El Toro, California*.
3. Southwest Division, Naval Facilities Engineering Command (NFECSW SDIEGO). 1993. *Marine Corps Air Station El Toro, California, Installation Restoration Program, Final Resource Conservation Recovery Act (RCRA), Facility Assessment Report*. San Diego. 16 July.
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5. OHM Remediation Services Corporation (OHM). 1998. *Tank Closure Report, USTs 658A and 658B, MCAS El Toro, California*. 27 March.
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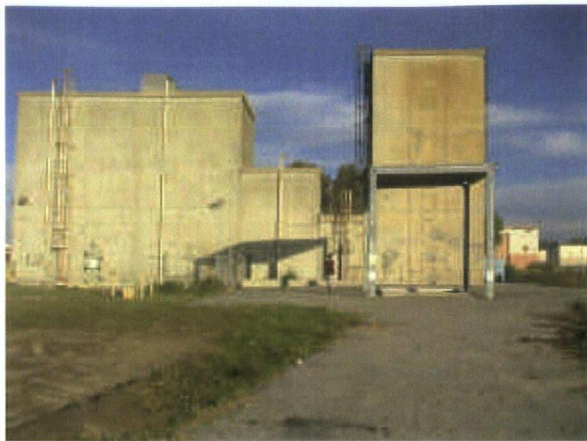
Summary Report

Site Plan PRL 658

Environmental Baseline Survey

Date: 02-05	Former MCAS El Toro	Figure 2
Project No. 54506	 A Tyco International Ltd. Company	

Appendix A
Sampling Design Specification Sheet – PRL 658

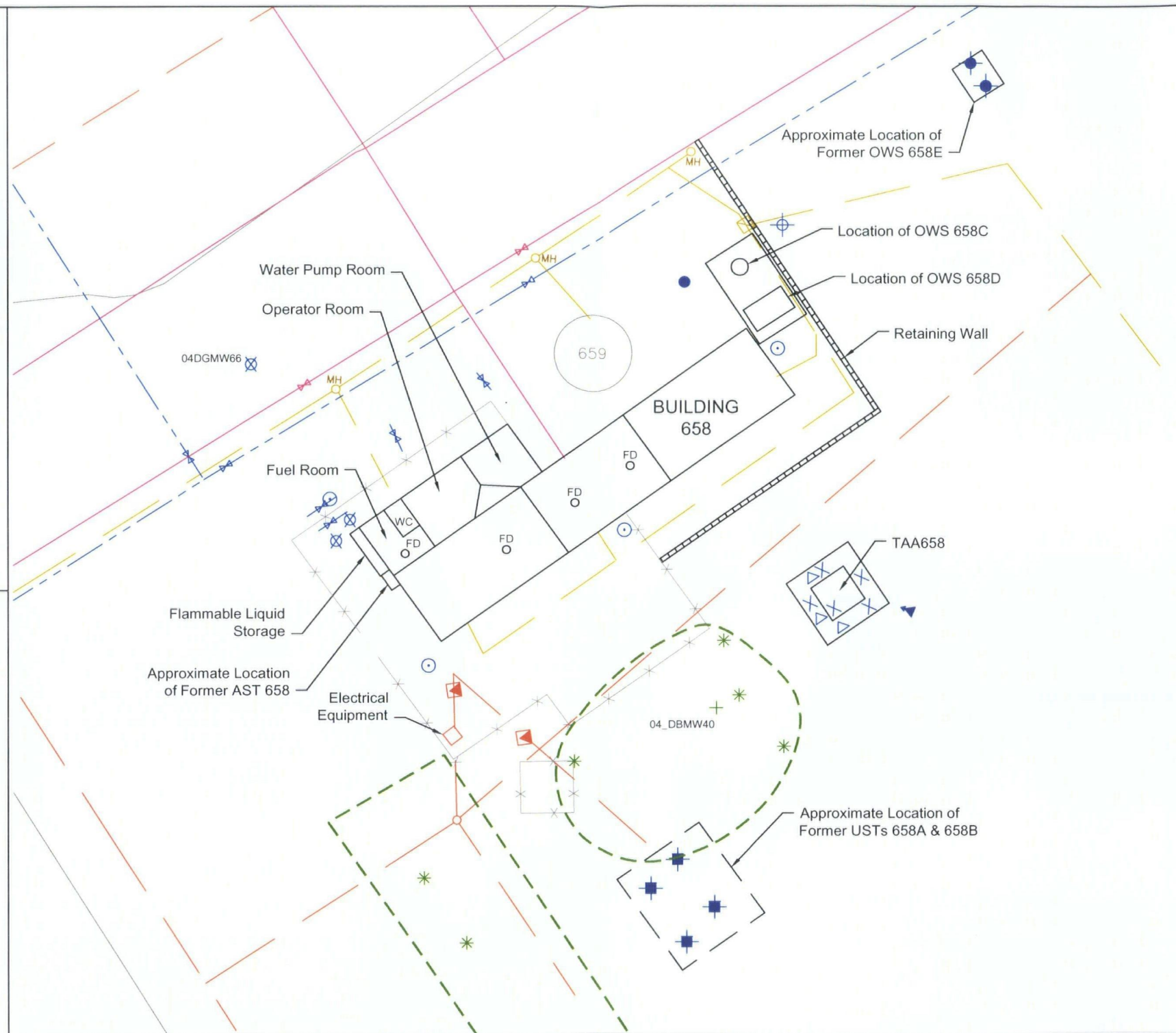


Southside of Building 658
(Facing North)

LEGEND:

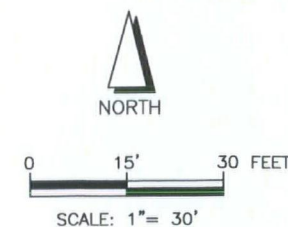
- Sanitary Sewer
- - - Water Line
- Natural Gas Line
- Electrical Line
- HA1 Proposed Soil Sample Location
- MH Manhole
- Transformer
- Water Valve
- WC Restroom
- FD Floor Drain
- - - IRP Site 4 Boundary

- + Phase I Monitoring Well (Jacobs, 1993)
Analytes: VOCs, SVOCs, Herbicides, Pesticides, PCB, Cyanide, Gross Beta)
- * Phase I Surface and Near Surface
Soil Sample Locations (Jacobs, 1993)
(Sample Depths: 0 - 4 ft bgs; Analytes: VOCs, SVOCs, Metals, Pesticides, PCB, TPH)
- Soil Borings (Observed During 2004 VSI)
- ⊗ Monitoring Well (Observed During 2004 VSI)
- × Approximate Soil Boring Locations (OHM 1998)
(Sample Depths: 1.5 - 3 ft bgs; Analytes: TPH, Pesticides, VOCs, SVOCs, Metals, Cyanide, pH)
- △ Approximate Soil Boring Locations (Shaw, 2003)
(Sample Depths: 3 ft bgs; Analytes: TPH, Pesticides, VOCs, SVOCs, Metals)



- Approximate Soil Boring Location (NFECSSW SDIEGO, 1998)
(Sample Depths: 11.5 - 41.5 ft bgs; Analytes: TPH, BTEX, MTBE)
- Approximate Soil Boring Locations (Geofon, 2003)
(Sample Depths: 5 ft bgs; Analytes: TPH, BTEX, VOCs)
- Approximate Sample Boring Locations (OHM, 1998)
(Sample Depths: 14.5 ft bgs; Analytes: TPH, BTEX)
- Approximate Angle Boring Location (NFECSSW SDIEGO 1993)
(Sample Depth: 10 - 60 feet bgs; Analytes: TPH, VOCs, SVOCs, Pesticides, PCB, Metal)

Note: Features and Interior Layout are Approximate
and May Not be to Scale



Background

The building was listed as Engine Test Cell in the 1973 and 1997 station lists. The last known description was Engine Test Cell. In 1989, RWQCB requested that the former jet engine cells be investigated. Concerns include the jet fuel piping in and beneath the floor and oil containing equipment may have been used inside the test cell facilities.

Nine locations of concern were associated with this site. OWS 658C is a 400-gallon oil/water separator (OWS) that was closed in place with concurrence from the RWQCB in a letter dated 8 January 2003. OWS 658D is a 1,750-gallon OWS that was closed in place with concurrence from the RWQCB in a letter dated 8 January 2003. OWS 658E was a 10-gallon OWS that was removed in November 2002. The site was closed by RWQCB in a letter dated 7 March 2003. AST 658 was a 200-gallon, ferrocene, aboveground storage tank that was removed and the site closed by DTSC in a letter dated 10 March 2003. IRP Site 4 comprises a ferrocene spill area southeast of Building 658. Sampling of soils was conducted as part of a Phase I remedial investigation (2). Based on the results, no further action was recommended. A record of decision for no further action for IRP Site 4 was signed on 30 September 1997 (3).

PCB T89 was a transformer that was replaced by a non-PCB transformer. The 1994 field survey indicated no evidence of release. No PCB releases were identified through the records searched or through the VSIs conducted for the 2003 EBS. TAA 658 (SWMU/AOC 171) was a less-than-90-day temporary accumulation area. Soil sampling was conducted at TAA 658 in 1998 and 2003, and the closure report is being reviewed by the BCT. UST 658A and 658B were 10,000-gallon, JP-5, underground storage tanks that were removed on 26 January 1998. Both USTs were closed by the OCHCA in a letter dated 24 April 1998.

The Department of the Navy is currently investigating the JP-5, underground pipeline, located near Building 658. A groundwater monitoring well was installed and several soil borings were advanced in conjunction with the investigation.

Issues/Concerns

1. Activities undertaken at the facility may have resulted in release of hazardous substances or pollutants (e.g. jet fuel) to the ground or sewer through subsurface piping associated with the facility.

Investigation Design

No investigation activities are proposed under this program due to previously completed investigations and ongoing evaluation of the JP-5 fuel line.

References

1. SCS Oil and Hazardous Substances Spill Prevention, Control & Countermeasure Field Survey Report & SPCC Plan. November 1979.
2. Bechtel National, Inc. (BNI). 1995. *Final Field Sampling Plan Phase II Remedial Investigation/Feasibility Study, Marine Corps Air Station, El Toro, California*. San Diego. August.
3. Earth Tech, Inc. 2003. *Final Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. Honolulu, HI. September.
4. Southwest Division, Naval Facilities Engineering Command (NFECSSW SDIEGO). 1993. *Survey of Industrial/Oily Waste Discharges to Storm and Sanitary Systems, Oily Waste Inventory- Final Report, 10 May 1978*. Appendix of Volume IV of RFA Report. July.
5. MCAS El Toro. 1985. *Hazardous Waste Storage Areas in Various Locations, Plan of Pad Sites 13, 14, 16, 17, 18, 19, and 20, sheet 7 of 23*. 12 April.
6. OHM Remediation Services Corporation (OHM). 1998. *Tank Closure Report, USTs 658A and 658B, MCAS El Toro, California*. 27 March.
7. NFECSSW SDIEGO. 1998. *Site Assessment Report, OWS Sites 658C and 658D, MCAS El Toro, California*. 31 December.
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9. NFECSSW SDIEGO. 2002. *Information Package, Above Ground Storage Tank 658, MCAS El Toro, California*. 4 April.
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11. Shaw Environmental, Inc. (Shaw). 2003. *Addendum to Closure Report, Former Temporary Accumulation Area 658, Former Marine Corps Air Station El Toro, California*. 27 May.
12. Jacobs Engineering Group Inc. (Jacobs). 1993. *Installation Restoration Program, Phase I Remedial Investigation, Draft Technical Memorandum, Marine Corps Air Station, El Toro, California*.

Preliminary Assessment		Final
Proposed Sampling Locations PRL 658		
Environmental Baseline Survey		
Date: 02-05	Former MCAS El Toro	
Project No. 54506	 EarthTech A Tyco International Ltd. Company	

Attachment 15
Summary Report
PRL1585



Summary Report for PRL 1585, Environmental Baseline Survey

**Former Marine Corps Air Station,
El Toro, California**

February 2005

Prepared for:

**Base Realignment and Closure
Program Management Office West
1230 Columbia Street, Suite 1100
San Diego, CA 92101**

Prepared by:

**Earth Tech, Inc.
841 Bishop Street, Suite 500
Honolulu, HI 96813-3920**

Prepared under:

**Comprehensive Long-Term Environmental Action Navy
Contract Number N62742-94-D-0048, CTO 0104**

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1.1 Issues and Concerns	1
2. CONCLUSIONS AND RECOMMENDATIONS	1
3. REFERENCES	2

FIGURES

Figure 1: Site Location Map – PRL 1585	5
Figure 2: Site Plan – PRL 1585	7

APPENDICES

A Sampling Design Specification Sheet – PRL 1585	
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ACRONYMS AND ABBREVIATIONS

EBS	environmental baseline survey
LOC	location of concern
MCAS	Marine Corps Air Station
NFEC SW SDIEGO	Naval Facilities Engineering Command, Southwest
OWS	oil/water separator
PRL	potential release location
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
VSI	visual site inspection

1. BACKGROUND

Potential Release Location (PRL) 1585 is associated with former Building 1585 and is located in the northeastern portion of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). The facility description was "General Warehouse" in the 1973 station list, which is the last known description. Figure 2 shows the plan of PRL 1585 and the surrounding area.

At the time of the 2002 visual site inspection (VSI), which was conducted in support of the environmental baseline survey (EBS) (Earth Tech 2003), no building was present at the location indicated by the station maps as Building 1585 (Earth Tech 2002, 2004). The only structure present was a concrete pad and catch basin, which appeared to be part of a wash rack.

Two locations of concern (LOCs) are associated with nearby Building 96. RFA 243 was a vehicle wash rack and has been demolished. The site was investigated (NFECSW SDIEGO 1993, 1998) and closed by the California Department of Toxic Substances Control as stated in a letter dated 23 July 1993. RFA 291 (also known as OWS 96) was an oil/water separator (OWS) that has been abandoned in place. The site was investigated (NFECSW SDIEGO 1993, 1998) and closed by the Regional Water Quality Control Board as stated in a letter dated 22 July 1999.

1.1 ISSUES AND CONCERNS

The following issues and concerns associated with this PRL were identified through the visual site inspection (VSI) and records review conducted in 2002 and 2004:

- Cracks were observed in the concrete pad through which the release of hazardous substances or pollutants may have taken place to the underlying soil. The wash rack was investigated as RFA 243 and closed.
- A catch basin was identified near the southwestern edge of the wash rack. Releases of hazardous substances or pollutants may have occurred to the underlying soil due to washing operations. This catch basin was investigated as a part of RFA 291 and closed.

2. CONCLUSIONS AND RECOMMENDATIONS

All LOCs associated with this PRL have been investigated and the sites closed by regulatory agencies. The issues and concerns identified during the EBS have also been addressed. No further investigation is recommended for PRL 1585.

3. REFERENCES

Earth Tech, Inc. 2002. *Visual Site Inspection, Environmental Baseline Survey, Former MCAS El Toro, California.*

———. 2004. *Visual Site Inspection. Environmental Baseline Survey, Former MCAS El Toro, California.*

Southwest Division, Naval Facilities Engineering Command (NFEC SW SDIEGO). 1993. *Marine Corps Air Station El Toro, California, Installation Restoration Program, Final Resource Conservation Recovery Act (RCRA), Facility Assessment Report.* San Diego, CA. 16 July.

———. 1998. *Site Assessment Report, Former OWS Site 96 and Adjacent Washrack.* San Diego, CA. 30 June.

Figures

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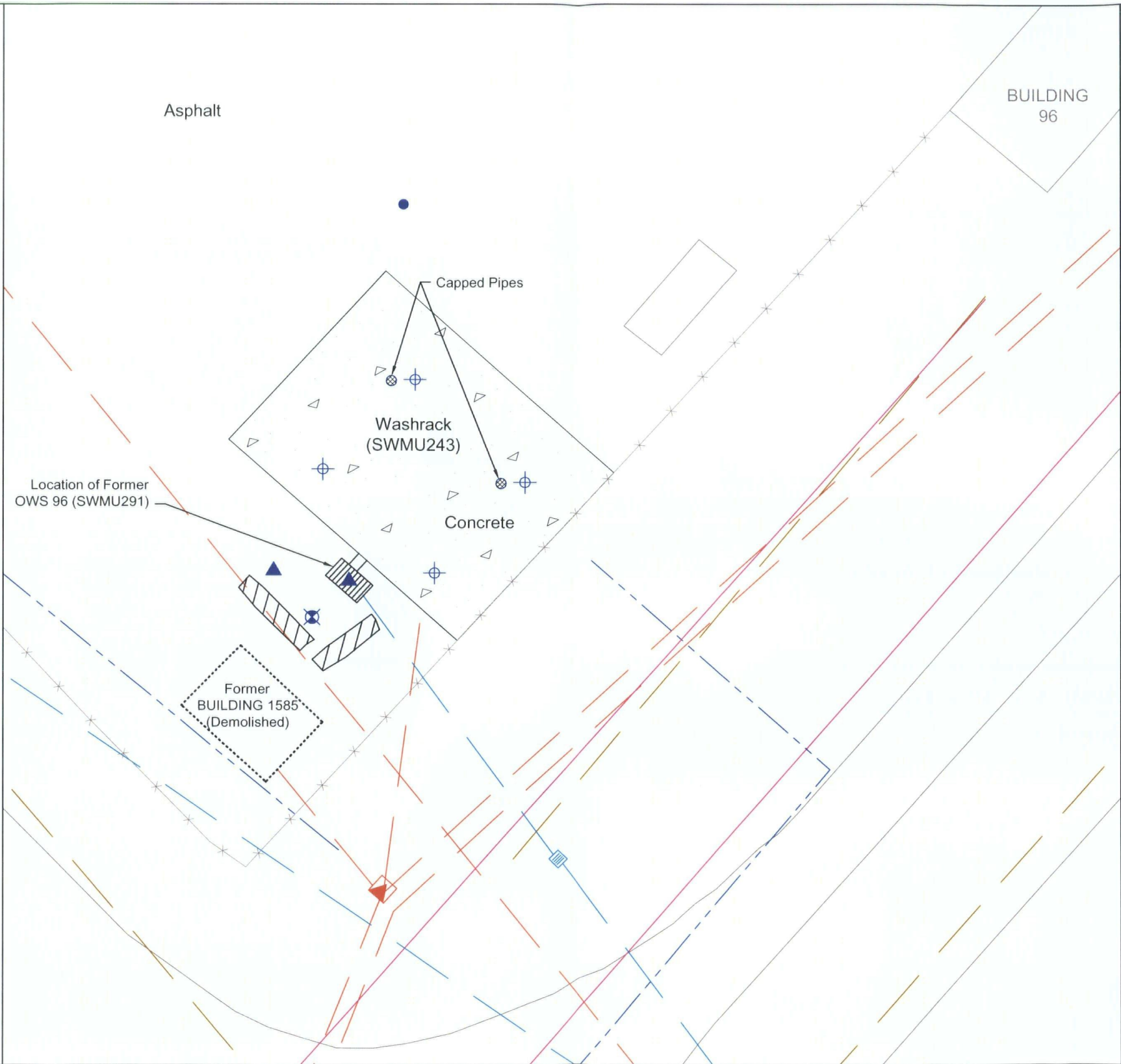
Wash Rack Area Located Northeast of Former Building 1585 (Facing East)



Catch Basin at Southwest Side of Wash Rack



Destructed Boreholes and Patched Asphalt Southwest of Wash Rack (Facing North)



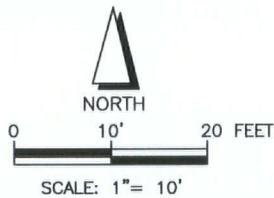
LEGEND:

- Sanitary Sewer
- Water Line
- Natural Gas Line
- Electrical Line
- Storm Sewer
- Catch Basin
- Existing Fence

- Approximate Soil Boring Locations (NFEC SW SDIEGO, 1998)
(Sample Depths: 1 - 41 ft bgs; Analytes: VOCs, TPH)
- Approximate Soil Boring Locations (NFEC SW SDIEGO, 1993)
(Sample Depths: 2 - 5 ft bgs; Analytes: VOC, TPH)
- Approximate Soil Boring Locations (NFEC SW SDIEGO, 1993)
(Sample Depths: 5 - 25 ft bgs; Analytes: VOC, TPH)
- Approximate Soil Gas Sample Locations (NFEC SW SDIEGO, 1994)
(Sample Depths: 0 - 20 ft bgs; Analytes: VOCs)

REFERENCES:

- Southwest Division, Naval Facilities Engineering Command (NFEC SW SDIEGO). 1993. *Marine Corps Air Station El Toro, California, Installation Restoration Program, Final Resource Conservation Recovery Act (RCRA), Facility Assessment Report*. San Diego. 16 July.
- NFEC SW SDIEGO. 1994. *Marine Corps Air Station El Toro, California, Installation Restoration Program, Remedial Investigation/Feasibility Study, Final Soil Gas Survey Technical Memorandum Sites 24 and 25*. San Diego. 31 October.
- NFEC SW SDIEGO. 1998. *Site Assessment Report, Former OWS Site 96 and Adjacent Washrack*. San Diego. 30 June.



Note: Features and Interior Layout are Approximate and May Not be to Scale

Summary Report

Site Plan
PRL 1585

Environmental Baseline Survey

Date: 02-05

Former MCAS El Toro

Project No.

54506

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Figure

2

February 2005

Summary Report for PRL 1585
Former MCAS El Toro

Appendix A
Sampling Design Specification Sheet – PRL 1585



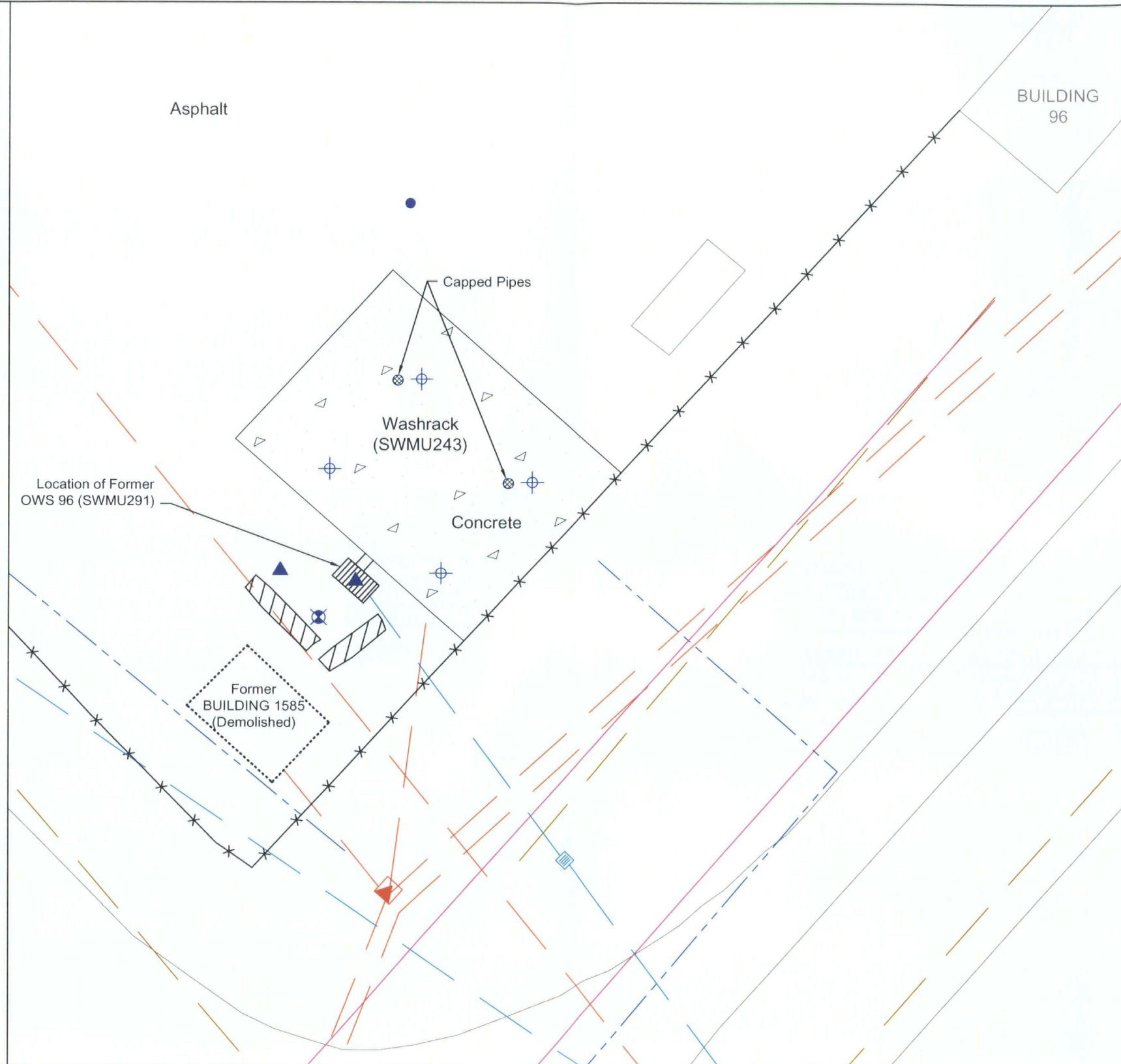
Wash Rack Area Located Northeast of Former Building 1585 (Facing East)



Catch Basin at Southwest Side of Wash Rack



Destructed Boreholes and Patched Asphalt Southwest of Wash Rack (Facing North)



LEGEND:

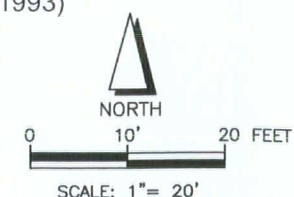
- Sanitary Sewer
- Water Line
- Natural Gas Line
- Electrical Line
- Storm Sewer
- Catch Basin
- Existing Fence

- Approximate Soil Boring Locations (NFEC SW SDIEGO, 1998) (Sample Depths: 1 - 41 ft bgs; Analytes: VOCs, TPH)
- Approximate Soil Boring Locations (NFEC SW SDIEGO, 1993) (Sample Depths: 2 - 5 ft bgs; Analytes: VOC, TPH)

- Approximate Soil Boring Locations (NFEC SW SDIEGO, 1993) (Sample Depths: 5 - 25 ft bgs; Analytes: VOC, TPH)

- Approximate Soil Gas Sample Locations (NFEC SW SDIEGO, 1994) (Sample Depths: 0 - 20 ft bgs; Analytes: VOCs)

Note: Features and Interior Layout are Approximate and May Not be to Scale



Background

The facility description was General Warehouse in the 1973 station list and the last known description was also General Warehouse.

At the time of the 2002 VSI in support of the 2003 EBS, no building was present at the location indicated by the station maps as Building 1585 (1). The only structure present was a concrete pad and catch basin that appeared to be part of a wash rack. Two locations of concern (LOCs) are associated with nearby Building 96. RFA 243 was a vehicle wash rack that has been demolished. The site was investigated (2,3) and closed by the DTSC in a letter dated 23 July 1993. RFA 291 (also known as OWS 96) was an oil/water separator that has been abandoned in place, the site investigated (2,3), and the site closed by the RWQCB in a letter dated 22 July 1999.

Conclusion

The LOCs have been investigated and the sites closed by regulatory agencies. No further investigation is required for PRL 1585.

References

1. Visual Site Inspection. 2002 and 2004.
2. Southwest Division, Naval Facilities Engineering Command (NFEC SW SDIEGO). 1993. *Marine Corps Air Station El Toro, California, Installation Restoration Program, Final Resource Conservation Recovery Act (RCRA), Facility Assessment Report*. San Diego. 16 July.
3. NFEC SW SDIEGO. 1998. *Site Assessment Report, Former OWS Site 96 and Adjacent Washrack*. San Diego. 30 June.
4. NFEC SW SDIEGO. 1994. *Marine Corps Air Station El Toro, California, Installation Restoration Program, Remedial Investigation/Feasibility Study, Final Soil Gas Survey Technical Memorandum Sites 24 and 25*. San Diego. 31 October.

Preliminary Assessment Final

Proposed Sampling Locations
PRL 1585

Environmental Baseline Survey

Date: 02-05	Former MCAS El Toro
Project No. 54506	Earth Tech A Tyco International Ltd. Company

**Attachment 16
Summary Report
PRL 1601**



Summary Report for PRL 1601, Environmental Baseline Survey

**Former Marine Corps Air Station,
El Toro, California**

February 2005

Prepared for:
**Base Realignment and Closure
Program Management Office West
1230 Columbia Street, Suite 1100
San Diego, CA 92101**

Prepared by:
**Earth Tech, Inc.
841 Bishop Street, Suite 500
Honolulu, HI 96813-3920**

Prepared under:
**Comprehensive Long-Term Environmental Action Navy
Contract Number N62742-94-D-0048, CTO 0104**

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1.1 Issues and Concerns	1
2. CONCLUSIONS AND RECOMMENDATIONS	2
3. REFERENCES	2

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Figure 2: Site Plan – PRL 1601	7

APPENDICES

A Sampling Design Specification Sheet – PRL 1601	
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ACRONYMS AND ABBREVIATIONS

EBS	environmental baseline survey
MCAS	Marine Corps Air Station
NFECSW SDIEGO	Naval Facilities Engineering Command, Southwest
PCB	polychlorinated biphenyl
PRL	potential release location
SWMU	solid waste management unit
VSI	visual site inspection

1. BACKGROUND

Potential Release Location (PRL) 1601 is associated with Building 1601 and is located in the western portion of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). The building was listed as "Public Works Maintenance Shop/Hazardous and Flammable Storage" in the 1973 list and as "Public Works Maintenance Storage" in the 1997 list, which is the last known description. Figure 2 shows the plan of Building 1601 and the surrounding area.

Building 1601 consists of two Quonset huts placed side-by-side. The building is situated in the southwest corner of a storage yard. Two bermed, concrete, containment pads are located northeast of the huts and labeled as hazardous materials storage areas. Unidentified drums, transformers, and other materials are stored in these areas. The pads were observed to be flooded with rainwater during the 2004 visual site inspection (VSI), which was conducted in support of the environmental baseline survey (EBS) (Earth Tech 2004). A third concrete containment pad is located north of Building 1601 and used to store transformers, most of which have blue labels designating them as containing fluids with less than 50 parts per million (ppm) polychlorinated biphenyls (PCBs).

Two other storage sheds are located in the yard north of Building 1601. Non-hazardous materials were observed to be stored in these sheds during the VSIs. At the time of the VSIs, the yard surrounding Building 1601 was being used to store various materials, such as pipes, valves, and railroad ties. In addition, drums, fire extinguishers, and containers of absorbent material were also observed in the yard.

The research conducted for the EBS revealed that past activities at this site included storage and use of paint and paint products, a solvent spray tank (NFECSW SDIEGO 1993), paint-stripping machines, and a paint mixer.

Two locations of concern are associated with this site. Solid waste management unit (SWMU) 88 consisted of two former drum storage areas, one located approximately 40 feet northwest of Building 1601 and the other directly adjacent to Building 1601 on the northeast side. Contaminated soils were excavated and the sites closed by the California Department of Toxic Substances Control as stated in a letter dated 23 April 2002.

PCB A1 is a transformer storage area located north of Buildings 1601. The site consists of a bermed concrete pad that was primarily used to store non-PCB transformers; however, a PCB-containing transformer was noted to have been stored there in the early 1990s (NFECSW SDIEGO 2004). The area surrounding PCB A1 is currently undergoing investigation by the Department of the Navy; this includes the hazardous storage areas adjacent to Building 1601.

1.1 ISSUES AND CONCERNS

The following issues and concerns associated with this PRL were identified through the VSI and records review conducted in 2002 and 2004:

- Spills and leaks from drums, transformers, and other equipment stored in the hazardous materials storage areas may have been released to the ground because of flooding and overflow of containment pads. Further evaluation was recommended.

2. CONCLUSIONS AND RECOMMENDATIONS

No further investigation of PRL 1601 is proposed under this program because of ongoing investigation of storage area PCB A1 and hazardous storage areas adjacent to Building 1601.

3. REFERENCES

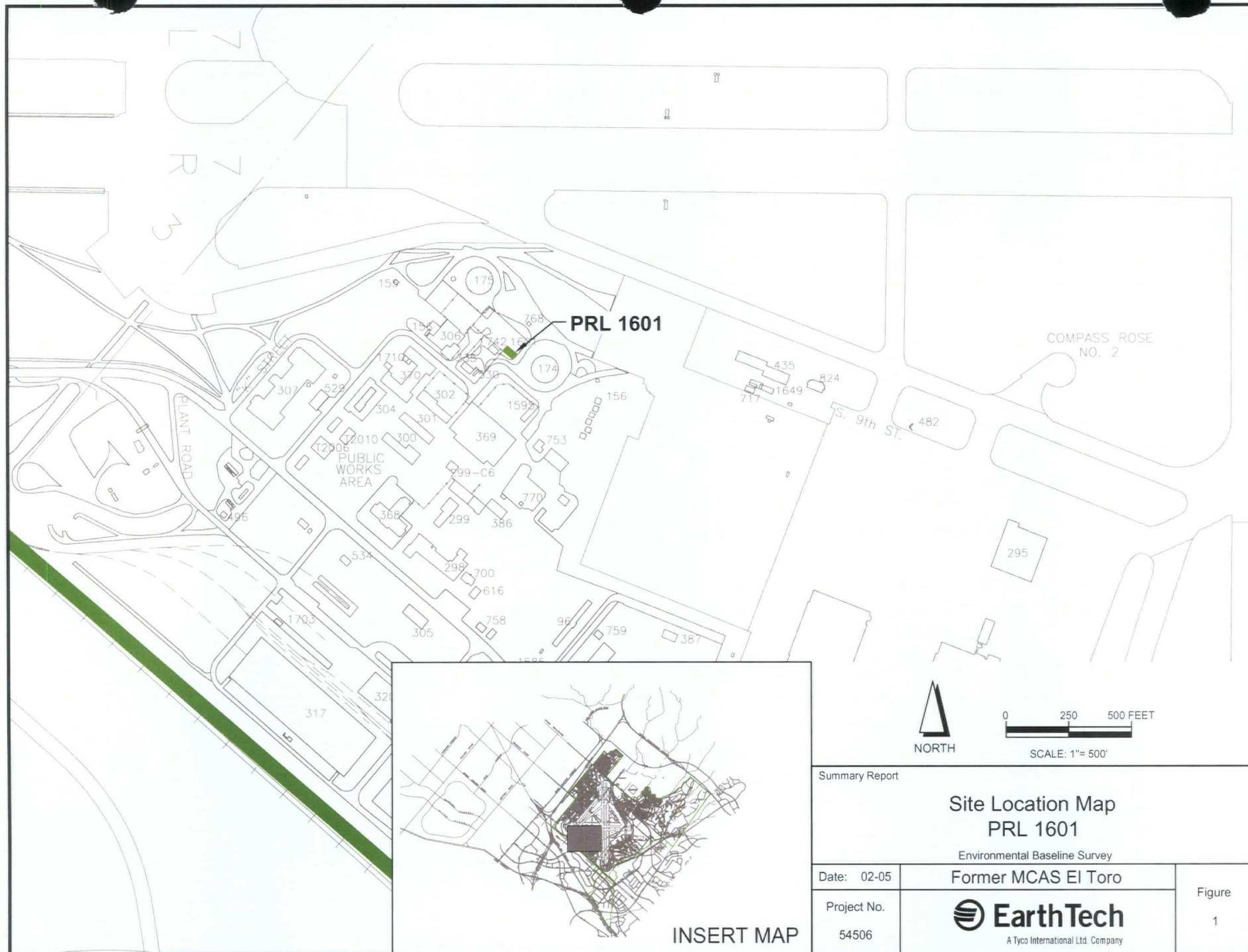
Earth Tech, Inc. 2002. *Visual Site Inspection, Environmental Baseline Survey, Former MCAS El Toro, California.*

———. 2004. *Visual Site Inspection. Environmental Baseline Survey, Former MCAS El Toro, California.*

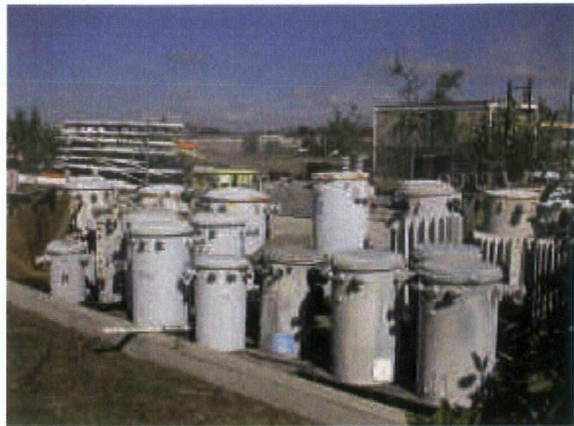
Southwest Division, Naval Facilities Engineering Command (NFEC SW SDIEGO). 1993. *Marine Corps Air Station El Toro, California, Installation Restoration Program, Final RCRA Facility Assessment Report, Volume IV, Appendix: Survey of Air Emission Sources.* San Diego, CA. 16 July.

NFEC SW SDIEGO. 2004. *Final Findings of Suitability to Lease for Carve-outs within Parcels I, II, and III, Former MCAS El Toro, California.* San Diego, CA. July.

Figures



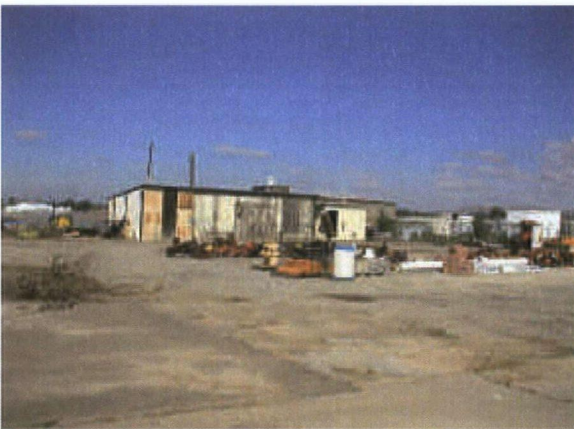
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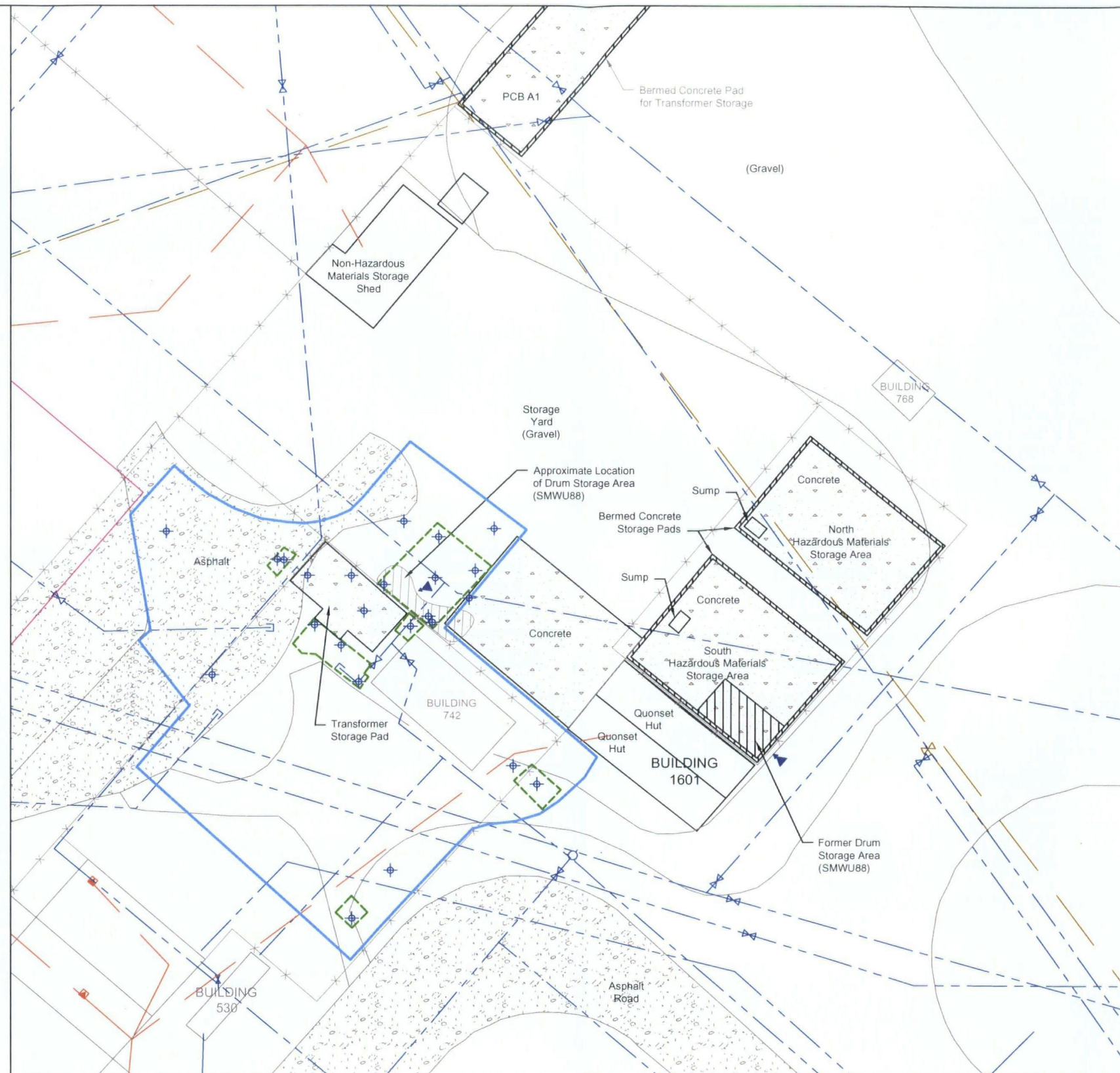
Transformers in North Hazardous Materials Storage Area (Facing North)



Drums/Containers in North Hazardous Materials Storage Area (Facing East)



Storage Yard Northwest of Building 1601 (Facing Northwest)



LEGEND:

- Sanitary Sewer
- - - Water Line
- - - Electrical Line
- ⋈ Water Valve
- ⊙ Fire Hydrant
- - - Limit of Excavation (OHM, 2001)

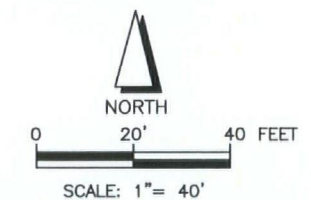
— Approximate Extent of Intrusive Investigation (BNI, 1996) (Sample Depths: 0.5 - 8.5 ft bgs; Analytes: Pesticides, PCBs)

▲ Approximate Angle Boring Location (NFECSSW SDIEGO, 1993) (Sample Depths: 10 - 60 ft; Analytes: TPH, VOCs, SVOCs, Pesticides/PCBs, Metals)

⊙ Soil Boring and/or Sample Location (OHM, 2001) (Sample Depths: 0 - 5 ft bgs; Analytes: Pesticides, PCBs, Metals)

REFERENCES:

1. Bechtel National, Inc. (BNI). 1996. Final Addendum to the RCRA Facility Assessment, MCAS El Toro, California (Volume 6 of the Final RCRA Report). San Diego. May.
2. OHM Remediation Services Corp (OHM). 2001. Closure Report-Solid Waste Unit #88 (SWMU 88), Marine Corps Air Station, El Toro, CA. San Diego, CA. 21 May.
3. Southwest Division, Naval Facilities Engineering Command (NFECSSW SDIEGO). 1993. Marine Corps Air Station El Toro, California, Installation Restoration Program, Final Resource Conservation Recovery Act (RCRA), Facility Assessment Report, Volume I. San Diego. 16 July.



Note: Features and Interior Layout are Approximate and May Not be to Scale

Summary Report

**Site Plan
PRL 1601**

Environmental Baseline Survey

Date: 02-05

Former MCAS El Toro

Project No.

54506

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Figure

2

February 2005

Summary Report for PRL 1601
Former MCAS El Toro

Appendix A
Sampling Design Specification Sheet – PRL 1601

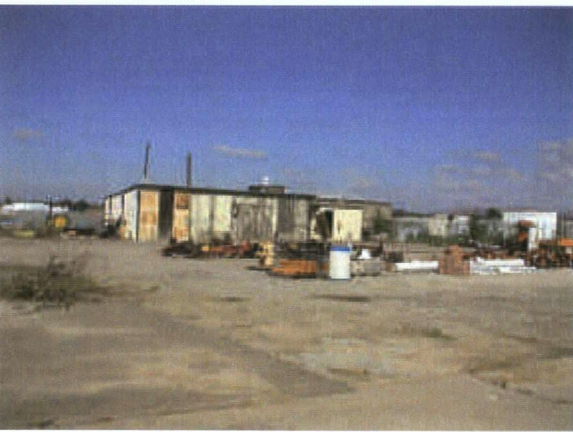
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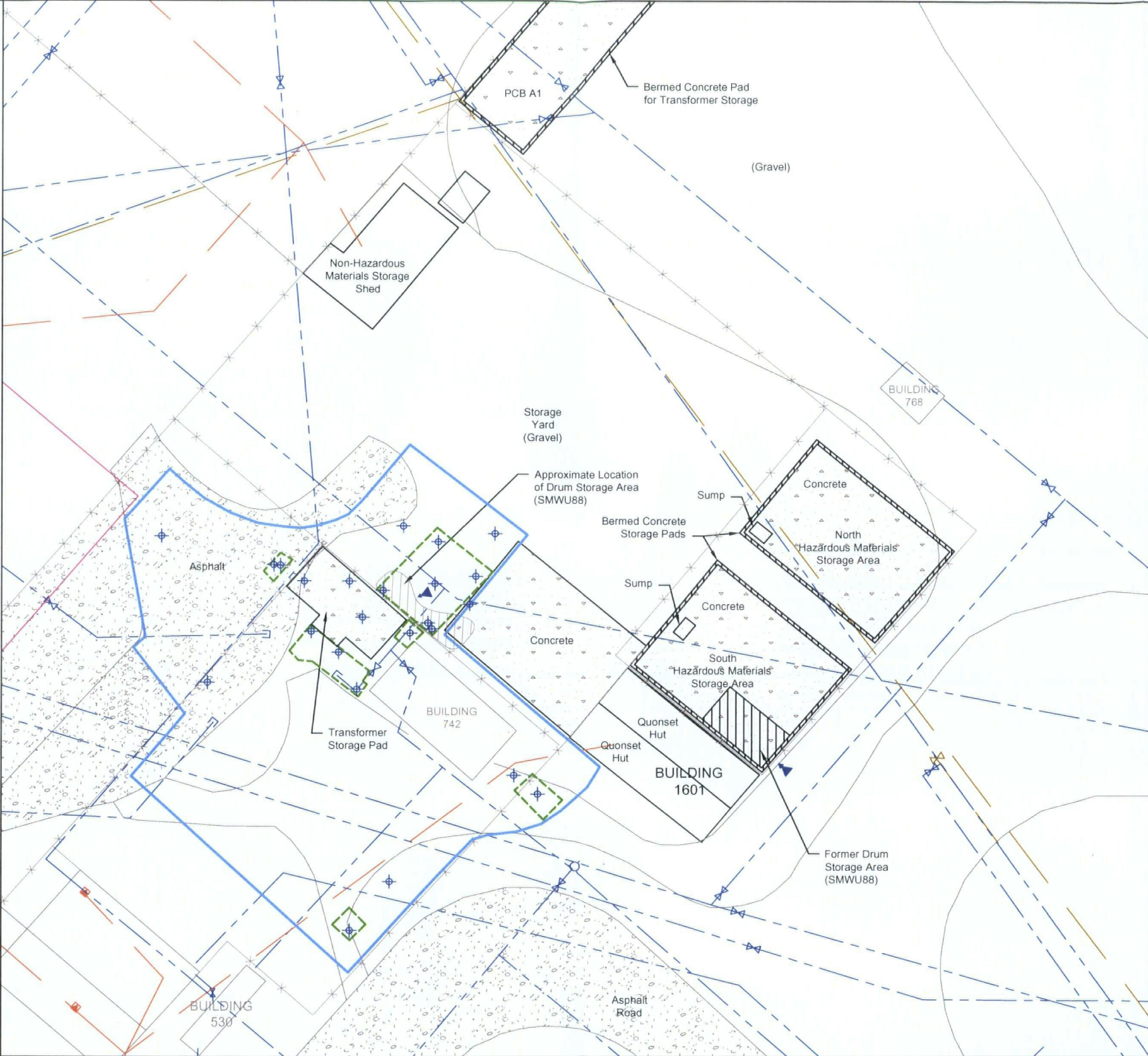
Transformers in North Hazardous Materials Storage Area (Facing North)



Drums/Containers in North Hazardous Materials Storage Area (Facing East)



Storage Yard Northwest of Building 1601 (Facing Northwest)



LEGEND:

—

Sanitary Sewer

- - -

Water Line

—

Electrical Line

Water Valve

Fire Hydrant

Limit of Excavation (OHM, 2001)

Approximate Extent of Intrusive Investigation (BNI, 1996)
(Sample Depths: 0.5 - 8.5 ft bgs; Analytes: Pesticides, PCBs)

Approximate Angle Boring Location (NFECWS SDIEGO, 1993)
(Sample Depths: 10 - 60 ft; Analytes: TPH, VOCs, SVOCs, Pesticides/PCBs, Metals)

Soil Boring and/or Sample Location (OHM, 2001)
(Sample Depths: 0 - 5 ft bgs; Analytes: Pesticides, PCBs, Metals)

Note: Features and Interior Layout are Approximate and May Not be to Scale

NORTH

0 20' 40' FEET

SCALE: 1"= 40'

Background
The building was listed as Public Works Maintenance Shop/Hazardous and Flammable Storage in the 1973 list and as Public Works Maintenance Storage in the 1997 list. The last known description is Public Works Maintenance Storage.
Building 1601 consists of two Quonset huts placed side-by-side. The building is situated in the southwest corner of a storage yard.
Two bermed concrete containment pads are located northeast of the huts and labeled as hazardous materials storage areas. Unidentified drums, transformers, and other materials are stored in these areas. The pads were observed to be flooded with rainwater during a site visit in support of the EBS (1).
A third concrete containment pad is located north of Building 1601 and used to store transformers most of which have blue labels designating them as containing fluids with less than 50 ppm PCBs (1).
Two other storage sheds are located north of Building 1601 and appear to be used for storage of non-hazardous materials. The yard surrounding Building 1601 is being used to store various materials such as pipes, valves, railroad ties, etc. In addition, drums, fire extinguishers and containers of absorbent material were also observed in the yard (1).
Activities that took place at this site include storage and use of paint and paint products, use of a solvent spray tank (2), paint stripping machines, and paint mixer.
Two locations of concern are associated with this site. SWMU88 consisted of two former drum storage areas; one was located approximately 40 feet northwest of Building 1601 and the other was located directly adjacent to Building 1601, on the northeast side. Contaminated soils were excavated and the sites closed by the DTSC in a letter dated 23 April 2002.
PCB A1 is a transformer storage area located north of Buildings 1601. The site consists of a bermed concrete pad that was primarily used to store non-PCB transformers; however, a PCB-containing transformer was noted to have been stored there in the early 1990s (4). The area surrounding PCB A1 is currently undergoing further investigation by the Department of the Navy, this includes the hazardous storage areas adjacent to Building 1601.

Issues/Concerns
1. Spills and leaks from drums and hazardous materials stored in open containment pads may have been released to the ground due to flooding of pads.

Investigation Design
No investigation activities are proposed under this program due to ongoing investigation of storage area PCB A1 and hazardous storage areas adjacent to Building 1601.

References
1. Visual Site Inspection. 2002 and 2004.
2. Southwest Division, Naval Facilities Engineering Command (NFECWS SDIEGO). 1993. *Marine Corps Air Station El Toro, California, Installation Restoration Program, Final RCRA Facility Assessment Report, Volume IV, Appendix: Survey of Air Emission Sources*. San Diego. 16 July.
3. NFECWS SDIEGO. 1993. *Marine Corps Air Station El Toro, California, Installation Restoration Program, Final Resource Conservation Recovery Act (RCRA), Facility Assessment Report, Volume I*. San Diego. 16 July.
4. NFECWS SDIEGO. 2004. *Final Findings of Suitability to Lease for Carve-outs within Parcels I, II, and III, Former MCAS El Toro, California*. San Diego. July.
5. Bechtel National, Inc. (BNI). 1996. *Final Addendum to the RCRA Facility Assessment, MCAS El Toro, California (Volume 6 of the Final RCRA Report)*. San Diego. May.
6. OHM Remediation Services Corp (OHM). 2001. *Closure Report-Solid Waste Unit #88 (SWMU 88), Marine Corps Air Station, El Toro, CA*. San Diego, CA. 21 May.

Preliminary Assessment

Final

Proposed Sampling Locations
PRL 1601

Environmental Baseline Survey

Date: 02-05

Former MCAS El Toro

Project No.
54506

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